

Service
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202P4 M25P



202P40/00C(PHILIPS)

DDC/Power saving/TCO

Service Manual

Horizontal frequencies
30 - 130kHz

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REFER TO BACK COVER FOR IMPORTANT SAFETY GUIDELINES

SAFETY NOTICE

ANY PERSON ATTEMPTING TO SERVICE THIS CHASSIS MUST FAMILIARIZE HIMSELF WITH THE CHASSIS AND BE AWARE OF THE NECESSARY SAFETY PRECAUTIONS TO BE USED WHEN SERVICING ELECTRONIC EQUIPMENT CONTAINING HIGH VOLTAGES.

CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING.



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Proper service and repair is important to the safe, reliable operation of all Philips Consumer Electronics Company** Equipment. The service procedures recommended by Philips and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Philips could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Philips has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Philips must first satisfy himself thoroughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

* * Hereafter throughout this manual, Philips Consumer Electronics Company will be referred to as Philips.

TO ENSURE THE CONTINUED RELIABILITY OF THIS PRODUCT, USE ONLY ORIGINAL MANUFACTURER'S REPLACEMENT PARTS, WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THIS SERVICE MANUAL.

WARNING

Critical components having special safety characteristics are identified with a ▲ by the Ref. No. in the parts list and enclosed within a broken line* (where several critical components are grouped in one area) along with the safety symbol ▲ on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from Philips. Philips assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.

* Broken Line 

Technical Specification*

CRT

Type NR.	: M51LRY32X62(MITSUBISHI)
Dimensions	: 22" NF
Phosphor Pitch(mm)	: Approx. 0.24 mm
Phosphor	: B22
Mask	: AG
Deflection angle	: 90 deg
Light transmission	: 38.4 %

Surface of plate	: Sputter coating
EHT	: 27.0 KV
Useful screen (mm)	: 406.1 x 304.6
Recommended	: 392 x 294 mm

Scanning

Horizontal scanning	: 30 - 130 KHz
Vertical scanning	: 50 - 160 Hz

Video

Video dot rate	: 320 Mhz
Input impedance	
-Video	: 75 Ohm
- Sync	: 2.2 kOhm
Input signal levels	: 0.7Vpp
	Separate sync
Sync input signal	: Composite sync
Sync polarities	: Positive / negative

White Color Temperature

Chromaticity CIE coordinates:		
at 9300 °k	x = 0.283 +/- 0.015	y = 0.297 +/- 0.015
6500 °k	x = 0.313 +/- 0.015	y = 0.329 +/- 0.015
5500 °k	x = 0.332 +/- 0.015	y = 0.347 +/- 0.015

Physical Specifications

Dimensions	: 501(W)x501.8(H)x465.8(D)mm
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weight	: 26 Kg
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Power supply	: 90 - 264 VAC, 47~63 HZ
Power consumption	: 160 Watts max
Power indicator	: LED (2 colors green, yellow).

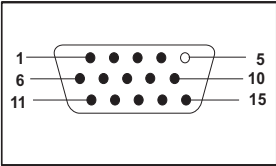
Power consumption	: 140W typ.
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Operating condition	
Temperature	: 0 °C - 35 °C
Relative Humidity	: 10 % - 90 %(W/O Condensation)

Storage condition	
Temperature	: - 40 °C - 60 °C
Relative Humidity	: 5 % - 95 %(W/O Condensation)

Pin assignment :

The 15-pin D-sub connector(male) of the signal cable
(IBM systems) :



Pin No.	Assignment	Pin No.	Assignment
1	Red video input	9	+5V
2	Green video input	10	Sync ground
3	Blue video input	11	Optional - Connected to pin 10
4	Optional- Connected to pin 10	12	Serial data line(SDA)
5	No connected	13	H.Sync /H+V
6	Red video ground	14	V.Sync(VCLK for DDC)
7	Green video ground	15	Data clock line(SCL)
8	Blue video ground		

Automatic Power Saving

If you have VESA's DPMS compliance display card or software installed in your PC, the monitor can automatically reduce its power consumption when not in use. And if an input from a keyboard, mouse or other input devices is detected, the monitor will automatically "wake up". The following table shows the power consumption and signalling of this automatic power saving features :

Mode	H, V	Video	power consumption	LED colors
ON	1 1	1	Normal	Green
OFF	0 1	→X	< 2 Watts	Yellow
OFF	1 0	→X	< 2 Watts	Yellow
OFF	0 0	→X	< 2 Watts	Yellow

→X : Video blanked.

This monitor is Energy Star® compliant .As an ENERGY STAR® Partner, PHILIPS has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

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Regulatory Information

TCO'92 and TCO '99 Information

Why do we have environmentally labeled computers?

In many countries, environmental labeling has become an established method for encouraging the adaptation of goods and services to the environment. The main problem, as far as computers and other electronics equipment are concerned, is that environmentally harmful substances are used both in the products and during their manufacture. Since it is not so far possible to satisfactorily recycle the majority of electronics equipment, most of these potentially damaging substances sooner or later enter nature.

There are also other characteristics of a computer, such as energy consumption levels, that are important from the viewpoints of both the work (internal) and natural (external) environments. Since all methods of electricity generation have a negative effect on the environment (e.g. acidic and climate-influencing emissions, radioactive waste), it is vital to save energy. Electronics equipment in offices is often left running continuously and thereby consumes a lot of energy.

What does labeling involve?

This product meets the requirements for the TCO'99 scheme which provides for international and environmental labeling of personal computers. The labeling scheme was developed as a joint effort by the TCO (The Swedish Confederation of Professional Employees), Svenska Naturskyddsforeningen (The Swedish Society for Nature Conservation) and Statens Energimyndighet (The Swedish National Energy Administration).

Approval requirements cover a wide range of issues: environment, ergonomics, usability, emission of electric and magnetic fields, energy consumption and electrical and fire safety.

The environmental demands impose restrictions on the presence and use of heavy metals, brominated and chlorinated flame retardants, CFCs (freons) and chlorinated solvents, among other things. The product must be prepared for recycling and the manufacturer is obliged to have an environmental policy which must be adhered to in each country where the company implements its operational policy.

The energy requirements include a demand that the computer and/or display, after a certain period of inactivity, shall reduce its power consumption to a lower level in one or more stages. The length of time to reactivate the computer shall be reasonable for the user.

Labeled products must meet strict environmental demands, for example, in respect of the reduction of electric and magnetic fields, physical and visual ergonomics and good usability.

Below you will find a brief summary of the environmental requirements met by this product. The complete environmental criteria document may be ordered from:

Environmental Requirements

Flame retardants

Flame retardants are present in printed circuit boards, cables, wires, casings and housings. Their purpose is to prevent, or at least to delay the spread of fire. Up to 30% of the plastic in a computer casing can consist of flame retardant substances. Most flame retardants contain bromine or chloride, and those flame retardants are chemically related to another group of environmental toxins, PCBs. Both the flame retardants containing bromine or chloride and the PCBs are suspected of giving rise to severe health effects, including reproductive damage in fish-eating birds and mammals, due to the bio-accumulative* processes. Flame retardants have been found in human blood and researchers fear that disturbances in fetus development may occur.

The relevant TCO'99 demand requires that plastic components weighing more than 25 grams must not contain flame retardants with organically bound bromine or chlorine. Flame retardants are allowed in the printed circuit boards since no substitutes are available.

Cadmium**

Cadmium is present in rechargeable batteries and in the color-generating layers of certain computer displays. Cadmium damages the nervous system and is toxic in high doses. The relevant TCO'99 requirement states that batteries, the color-generating layers of display screens and the electrical or electronics components must not contain any cadmium.

Mercury**

Mercury is sometimes found in batteries, relays and switches. It damages the nervous system and is toxic in high doses. The relevant TCO'99 requirement states that batteries may not contain any mercury. It also demands that mercury is not present in any of the electrical or electronics components associated with the labeled unit.

CFCs (freons)

The relevant TCO'99 requirement states that neither CFCs nor HCFCs may be used during the manufacture and assembly of the product. CFCs (freons) are sometimes used for washing printed circuit boards. CFCs break down ozone and thereby damage the ozone layer in the stratosphere, causing increased reception on earth of ultraviolet light with increased risks e.g. skin cancer (malignant melanoma) as a consequence.

Lead**

Lead can be found in picture tubes, display screens, solders and capacitors. Lead damages the nervous system and in higher doses, causes lead poisoning. The relevant TCO'99 requirement permits the inclusion of lead since no replacement has yet been developed.

* Bio-accumulative is defined as substances which accumulate within living organisms.

** Lead, Cadmium and Mercury are heavy metals which are bio-accumulative.

Energy Star Declaration

This monitor is equipped with a function for saving energy which supports the VESA Display Power Management Signaling (DPMS) standard. This means that the monitor must be connected to a computer which supports VESA DPMS to fulfill the requirements in the NUTEK specification 803299/94. Time settings are adjusted from the system unit by software. From indicated inactivity to Power Saving Position A2, the total time must not be set to more than 70 minutes.

NUTEK

Federal Communications Commission (FCC) Notice (U.S. Only)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

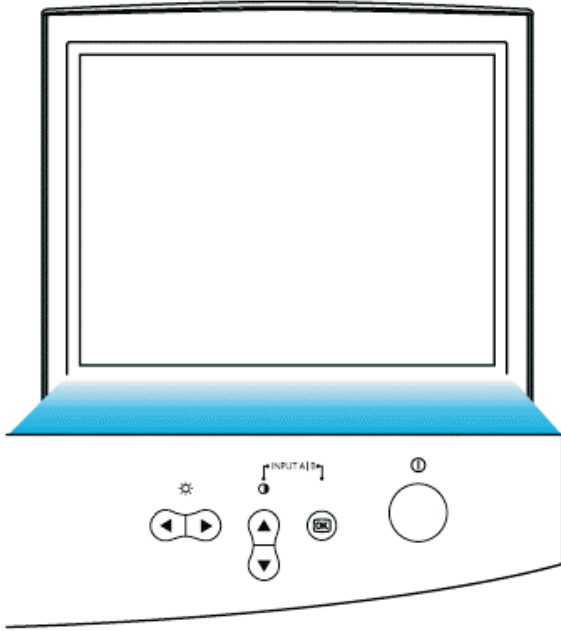
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Use only RF shielded cable that was supplied with the monitor when connecting this monitor to a computer device.

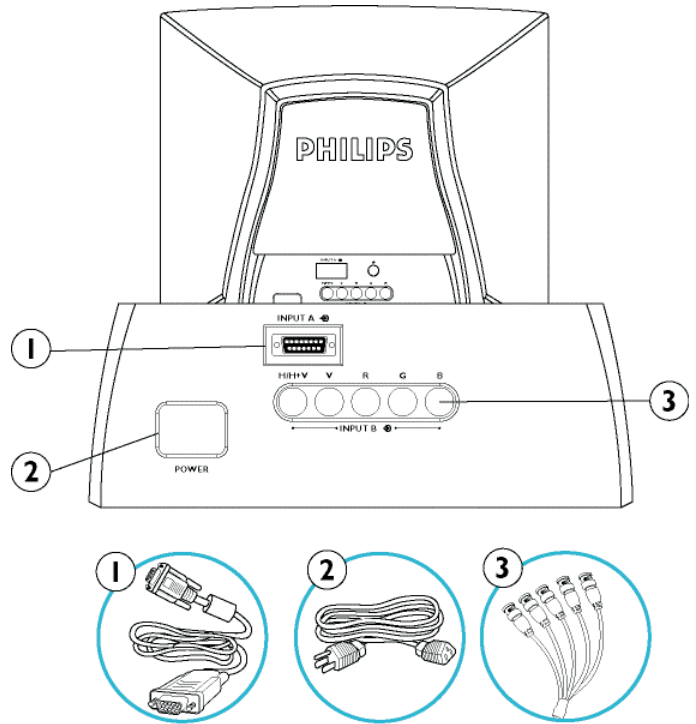
To prevent damage which may result in fire or shock hazard, do not expose this appliance to rain or excessive moisture.

THIS CLASS B DIGITAL APPARATUS MEETS ALL REQUIREMENTS OF THE CANADIAN INTERFERENCE-CAUSING EQUIPMENT REGULATIONS.

Front View



Rear View



Power button switches your monitor on.



OK button which when pressed will take you to the OSD controls



Contrast hotkey. When the UP arrow is pressed, the adjustment controls for the CONTRAST will show up.



UP and DOWN buttons are used when adjusting the OSD of your monitor



Brightness hotkey. When the RIGHT arrow is pressed, the adjustment controls for BRIGHTNESS will show up.



LEFT and RIGHT buttons, like the UP and DOWN buttons, are also used in adjusting the OSD of your monitor.



By pressing both the UP and OK buttons, you can easily access the Input Signals A and/ or B.

1. D-Sub Port - Attach the D-Sub connector that comes with your monitor here. Other end connects to your PC.

2. Power in - Attach power cable here.

3. BNC Connectors - Attach the connectors here to get the best video performance from your monitor.

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Data Storage(Resolution Modes)

Factory preset modes:

This monitor has 36 factory-preset modes as indicated in the following table:

MODE NO.	RESOLUTION	f h	f v	SYNC. H/V POLARITY
1	640 x 480	31.469 kHz	59.941 Hz	- / -
2	720 x 400	31.468 kHz	70.084 Hz	- / +
3	640 x 480	37.500 KHz	75.000 Hz	- / -
4	640 x 480	37.861 kHz	72.810 Hz	- / -
5	800x600	37.879 kHz	60.317Hz	+ / +
6	640 x 480	43.269 kHz	85.008 Hz	- / -
7	800 x 600	46.875 kHz	75.000 Hz	+ / +
8	800 x 600	48.077 kHz	72.188 Hz	+ / +
9	1024 x 768	48.363 kHz	60.004 Hz	- / -
10	832 x 624	49.722 kHz	74.546 Hz	+ / +
11	640 x 480	50.628 kHz	100.10 Hz	- / -
12	800 x 600	53.674 kHz	85.061 Hz	+ / +
13	1024 x 768	56.476 kHz	70.069 Hz	- / -
14	1792 x 1344	119.935KHz	85.000Hz	+ / +
15	1024 x 768	60.023 kHz	75.029 Hz	+ / +
16	800 x 600	63.923 kHz	100.00 Hz	+ / +
17	1280 x 1024	63.981 kHz	60.020 Hz	+ / +
18	1024 x 768	68.677 kHz	84.997 Hz	+ / +
19	1152 x 870	68.681 kHz	74.979 Hz	- / -
20	1856 x 1392	124.185KHz	85.000Hz	+ / +
21	1920 x1440	128.520KHz	85.000Hz	+ / +
22	1600 x 1200	75.000 kHz	60.000 Hz	+ / +
23	1280 x1024	79.976 kHz	75.024 Hz	+ / +
24	1600 x 1200	81.250 kHz	65.000 Hz	+ / +
25	1792 x 1344	83.640 kHz	59.999 Hz	+ / +
26	1920 x1440	120.56HKz	80.000Hz	+ / +
27	1856 x 1392	86.333 kHz	59.995 Hz	+ / +
28	1600 x 1200	87.500 kHz	70.000 Hz	+ / +
29	1920 x 1440	90.000 kHz	60.000 Hz	+ / +
30	1280 x 1024	91.146 kHz	85.024 Hz	+ / +
31	1600 x 1200	93.750 kHz	75.000 Hz	+ / +
32	1600 x 1200	106.250 kHz	85.000 Hz	+ / +
33	1792 x 1344	106.270 kHz	74.997 Hz	+ / +
34	1920 x 1440	112.5 kHz	75.000 Hz	+ / +
35	2048 x 1536	120.450 kHz	75.000 Hz	+ / +
36	2048 x 1536	130KHz	80Hz	+ / +

OSD Adjustment

On-Screen Display






[Description of the On-Screen Display](#) [The OSD Tree](#) [The OSD Controls](#)

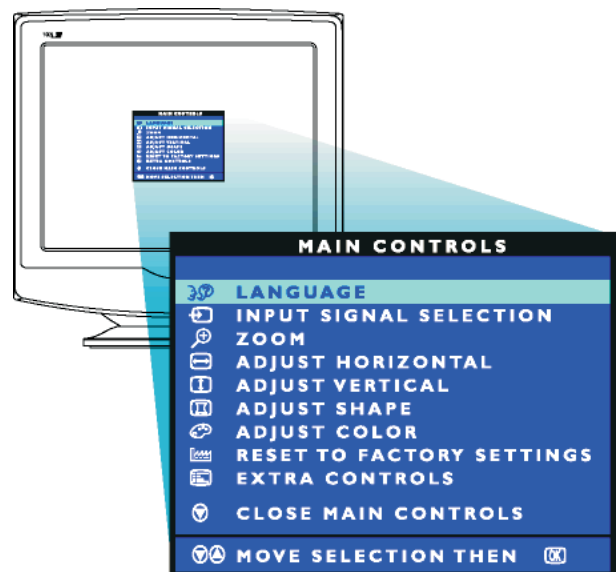
Description of the On Screen Display

What is the On-Screen Display?

This is a feature in all Philips monitors which allows an end-user to adjust screen performance of monitors directly through an on-screen instruction window. The user interface provides user-friendliness and ease-of-use when operating the monitor.

Basic and simple instruction on the control keys.

On the front controls of your monitor, once you press the  button, the On Screen Display (OSD) Main Controls window will pop up and you can now start making adjustments to your monitor's various features. Use the   or   the keys to make your adjustments within.



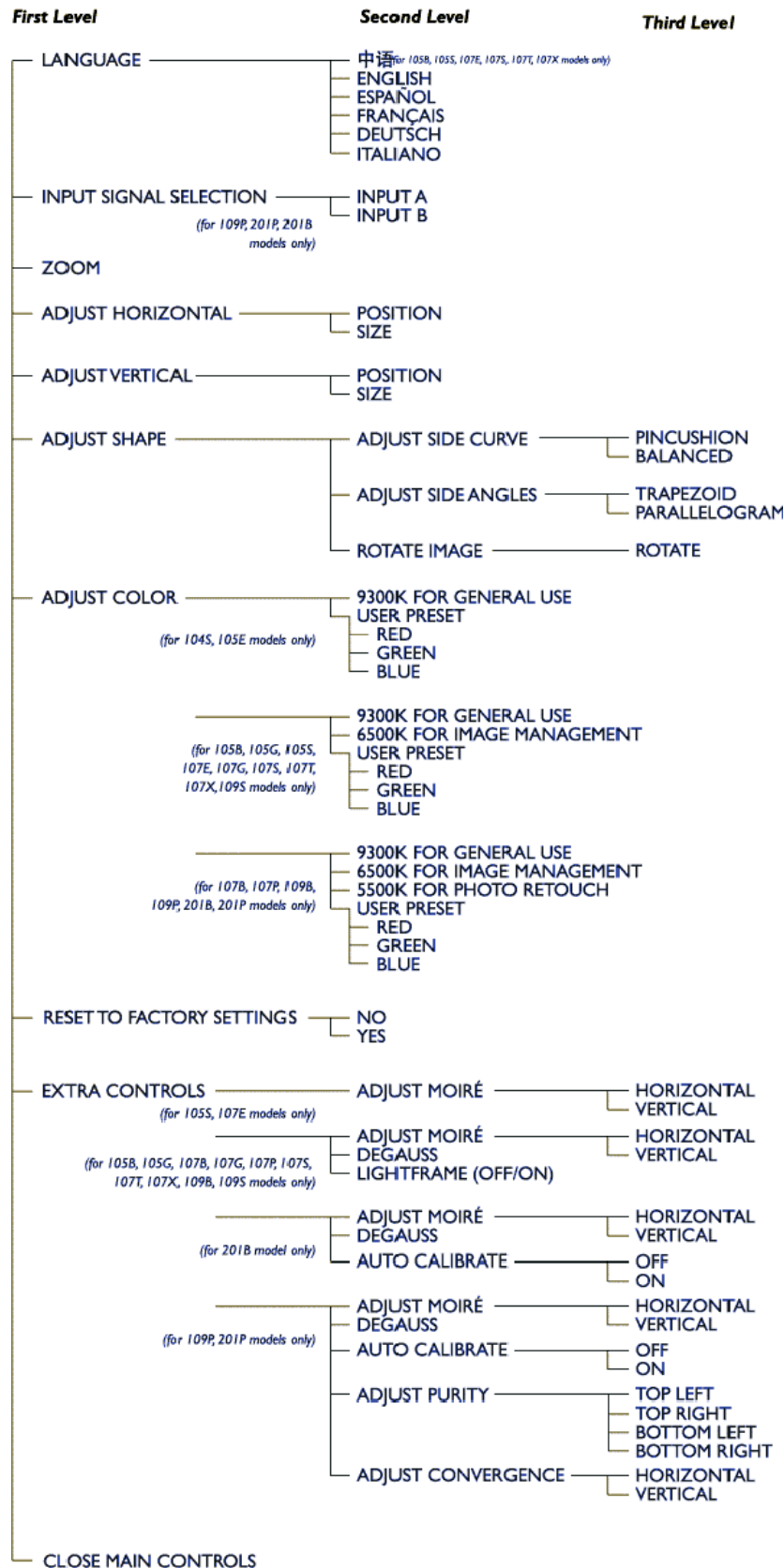
The OSD Tree

Below is an overall view of the structure of the On-Screen Display. You can use this as reference when you want to later on work your way around the different adjustments.

The OSD Tree

Below is an overall view of the structure of the On-Screen Display. You can use this as reference when you want to later on work your way around the different adjustments.

CRT OSD tree / English



* Specifications are subject to change without prior notice.



OSD Adjustments

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The OSD Controls

BRIGHTNESS

To adjust your screen's brightness, follow the steps below. Brightness is the overall intensity of the light coming from the screen. A 50% brightness is recommended.

- 1) Press the  or  button on the monitor. The BRIGHTNESS window appears.





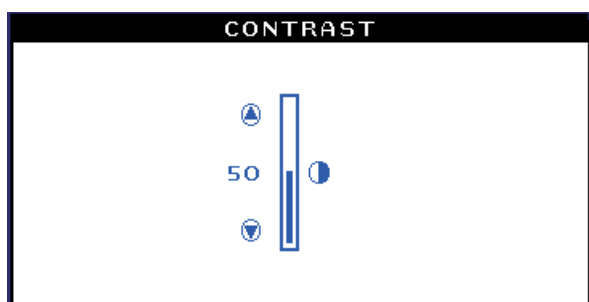
- 2) Press the  or  button to adjust the brightness.
- 3) When the brightness is adjusted to the level desired, stop pressing the  or  button and after three seconds the BRIGHTNESS window will disappear with the new adjustment saved.





Smart Help After the BRIGHTNESS window has disappeared, to continue to the CONTRAST window, follow the steps under CONTRAST.

CONTRAST

To adjust your screen's contrast, follow the steps below. Contrast is the difference between the light and dark areas on the screen. A 100% contrast is recommended.

- 1) Press the  or  button on the monitor. The CONTRAST window appears.





- 2) Press the  or  button to adjust the contrast.
- 3) When the contrast is adjusted to the level desired, stop pressing the  or  button and after three seconds the CONTRAST window will disappear with the new adjustment saved.



Smart Help After the CONTRAST window has disappeared, to continue to the MAIN CONTROLS, follow the steps under LANGUAGE

LANGUAGE


The ON SCREEN DISPLAY shows its settings in one of five languages. The default is English, but you can select French, Spanish, German, or Italian.

- 1) Press the  button on the monitor. The MAIN CONTROLS window appears. LANGUAGE should be highlighted.
- 2) Press the  button again. The LANGUAGE window appears.




- 3) Press the  or  button until the desired language is highlighted.



- 4) Press the  button to confirm your selection and return to MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted...



Smart Help After returning to MAIN CONTROLS . . .

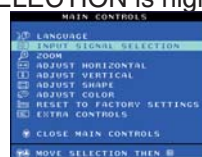
. . . to continue to INPUT SIGNAL SELECTION, press the  button until INPUT SIGNAL SELECTION is highlighted. Next, follow steps 3 - 5 under INPUT SIGNAL SELECTION.


. . . to exit completely, press  the button

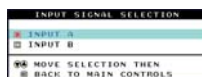
INPUT SIGNAL SELECTION




INPUT SIGNAL SELECTION determines what you see on the screen. The default setting is INPUT A, but if the video input signal is different that the output signal, you may want to change it to INPUT B.?

- 1) Press the  button on the monitor. The MAIN CONTROLS window appears.
- 2) Press the  button until INPUT SIGNAL SELECTION is highlighted.




- 3) Press the  button. The INPUT SIGNAL SELECTION window appears.



- 4) Press the  or  button to highlight INPUT B or INPUT A.
- 5) Press the  button to confirm your selection and return to the MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.



Smart Help After returning to MAIN CONTROLS . . .

. . . to continue to ZOOM, press the  button until ZOOM is highlighted. Next, follow steps 3 - 5 under ZOOM.

. . . to exit completely, press the  button

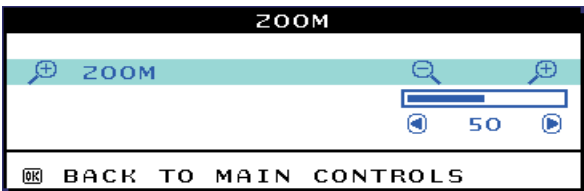
ZOOM




ZOOM increases or decreases the size of the images on your screen. To adjust the ZOOM follow the steps below.

- 1) Press the  button on the monitor. The MAIN CONTROLS window appears.
- 2) Press the  button until ZOOM is highlighted.





- 3) Press the  button. The ZOOM window appears.



- 4) Press the  or  button to adjust ZOOM.
- 5) Press the  button to confirm your selection and return to the MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.



Smart Help After returning to MAIN CONTROLS . . .

. . . to continue to ADJUST HORIZONTAL, press the  button until ADJUST HORIZONTAL is highlighted. Next, follow steps 3 - 7 under ADJUST HORIZONTAL.

. . . to exit completely, press the  button

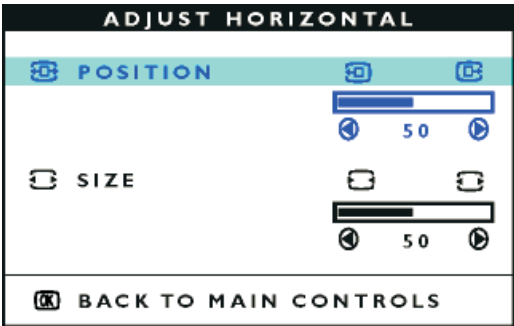
ADJUST HORIZONTAL

ADJUST POSITION under ADJUST HORIZONTAL shifts the image on your screen either to the left or right. Use this feature if your image does not appear centered. ADJUST SIZE under ADJUST HORIZONTAL expands or controls the image on your screen, pushing it out toward the left and right sides or pulling it in toward the center.



- 1) Press the  button on the monitor. The MAIN CONTROLS window appears.
- 2) Press the  button until ADJUST HORIZONTAL is highlighted.

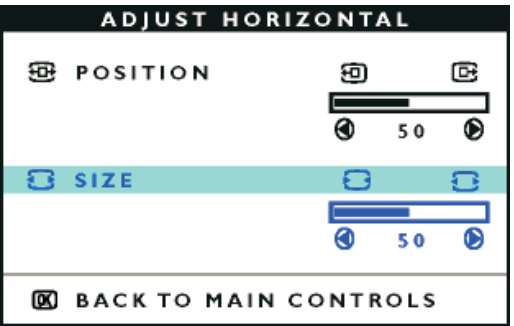





- 3) Press the  button. The ADJUST HORIZONTAL window appears. ADJUST POSITION should be highlighted.




- 4) Press the  or  button to move the image to the left or right.


- 5) When the position is adjusted, press the  button to return to MAIN CONTROLS window, or press the  to highlight ADJUST SIZE.



- 6) To adjust the horizontal size, press th  or  button.
- 7) When the size is adjusted, press the  button to return to MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.


Smart Help After returning to MAIN CONTROLS . . .

. . . to continue to ADJUST VERTICAL, press the  button until ADJUST VERTICAL is highlighted. Next, start with step 3 under ADJUST VERTICAL and follow the directions.

. . . to exit completely, press the  button

ADJUST VERTICAL

ADJUST POSITION under ADJUST VERTICAL shifts the image on your screen either up or down. Use this feature if your image does not appear centered. ADJUST SIZE under ADJUST VERTICAL expands or controls the image on your screen, pushing it out toward the top or bottom or pulling it in toward the center.


- 1) Press the  button on the monitor. The MAIN CONTROLS window appears.

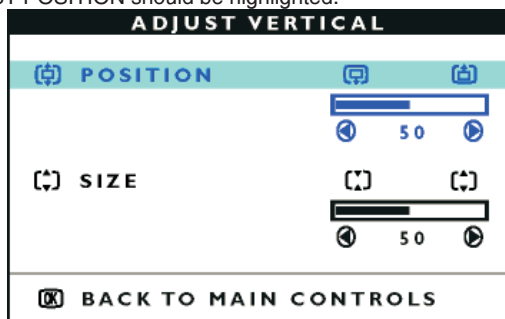
OSD Adjustments



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2) Press the  button until ADJUST VERTICAL is highlighted.

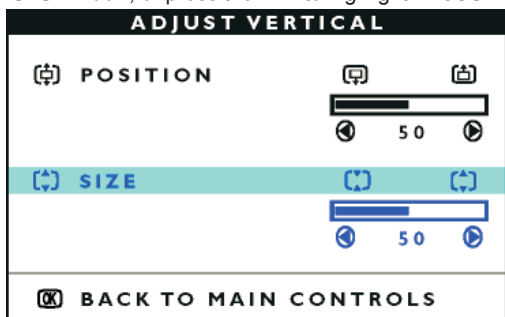




3) Press the  button. The ADJUST VERTICAL window appears. ADJUST POSITION should be highlighted.




4) Press the  or  button to move the image up or down.


5) When the position is adjusted, press the  button to return to MAIN CONTROLS window, or press the  to highlight ADJUST SIZE.



6) To adjust the vertical size, press the  or  button.

7) When the size is adjusted, press the  button to return to MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.

Smart Help After returning to MAIN CONTROLS . . .


. . . to continue to ADJUST SHAPE, press the  button until ADJUST SHAPE is highlighted. Next, start with step 3 under ADJUST SHAPE and follow the directions.

. . . to exit completely, press the  button

ADJUST SHAPE


ADJUST SIDE CURVE

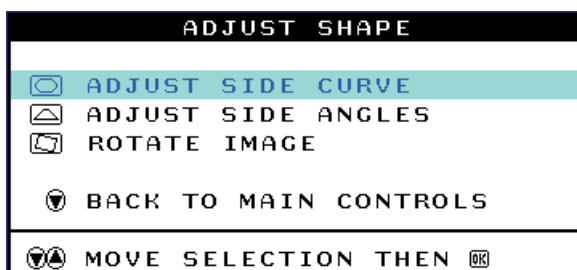
ADJUST SIDE CURVE under ADJUST SHAPE allows you to adjust two of the five preset options. These two options are PINCUSHION and BALANCED pincushion. Note: use these features only when the picture is not square.

1) Press the  button on the monitor. The MAIN CONTROLS window appears.

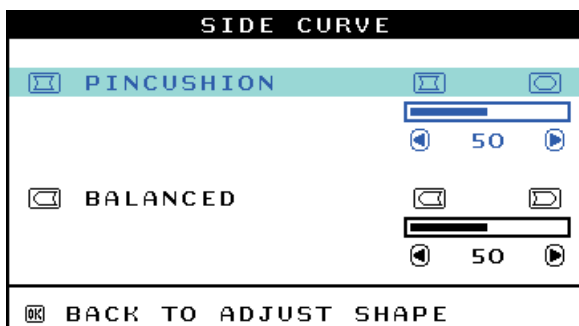
2) Press the  button until ADJUST SHAPE is highlighted.





3) Press the  button. The ADJUST SHAPE window appears. ADJUST SIDE CURVE should be highlighted.

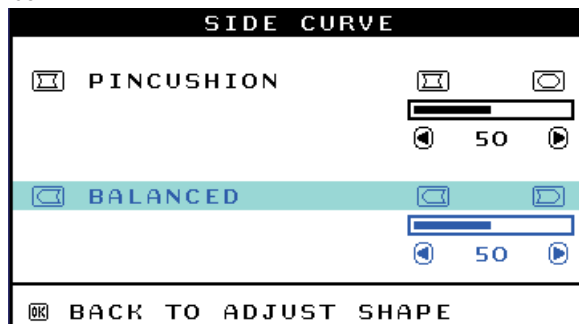




4) Press the  button. The SIDE CURVE window appears. PINCUSHION should be highlighted.






5) To adjust the pincushion, press the  or  button.

6) When the pincushion is adjusted, press the  button to highlight BALANCED or press the  button to return to the ADJUST SHAPE window.



7) To adjust the balanced pincushion, press the  or  button.

8) When the balanced pincushion is adjusted, press the  button to return to the ADJUST SHAPE window. BACK TO MAIN WINDOWS will be highlighted.


9) Press the  button to return to the MAIN CONTROLS window, or press the  button until ADJUST SIDE ANGLES is highlighted.

◀◀ Go to cover page

Smart Help After returning to MAIN CONTROLS . . .

...to continue to ADJUST SIDE ANGLES, start with step 5 under ADJUST SIDE ANGLES and follow the directions.


...to exit completely, press the  button twice.

...to adjust only the BALANCED pincushion, follow steps 1 - 4 above, then press the  button, and follow steps 7 - 9.

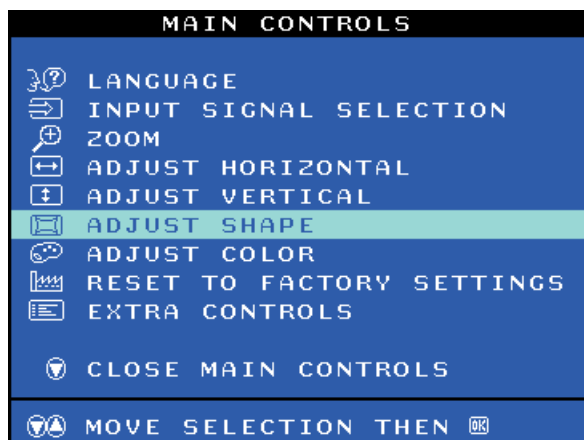
...to adjust only the PARALLELOGRAM, follow steps 1 - 4 above, then press the  button, and follow steps 7 - 9


ADJUST SIDE ANGLES

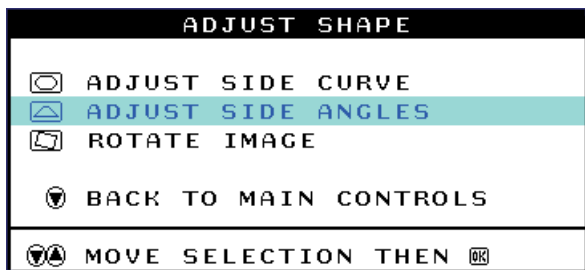
ADJUST SIDE ANGLES under ADJUST SHAPE allows you to adjust two of the five preset options. These two options are TRAPEZOID and PARALLELOGRAM. Note: use these features only when the picture is not square.

1) Press the  button on the monitor. The MAIN CONTROLS window appears.

2) Press the  button until ADJUST SHAPE is highlighted.

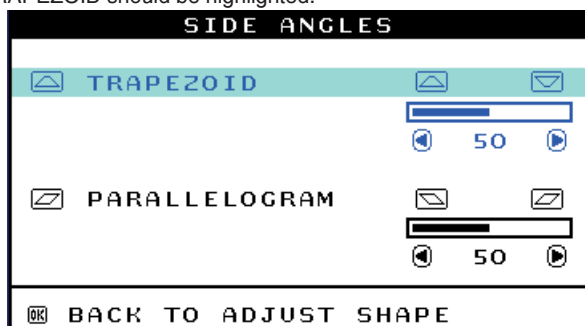




3) Press the  button. The ADJUST SHAPE window appears. ADJUST SIDE CURVE should be highlighted.





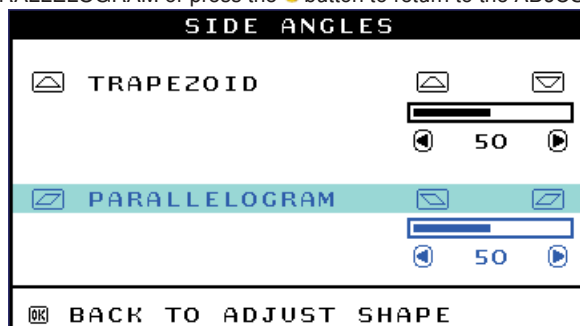
4) Press the  button to highlight ADJUST SIDE ANGLES.

5) Press the  button. The SIDE ANGLES window appears. TRAPEZOID should be highlighted.






6) To adjust the trapezoid, press the  or  button. SHAPE window.

7) When the trapezoid is adjusted, press the  button to highlight PARALLELOGRAM or press the  button to return to the ADJUST



8) To adjust the parallelogram, press the  or  button.

9) When the parallelogram is adjusted, press the  button to return to the ADJUST SHAPE window. BACK TO MAIN WINDOWS will be highlighted.

10) Press the  button to return to the MAIN CONTROLS window, or press the  button until ROTATE IMAGE is highlighted.

Smart Help After returning to MAIN CONTROLS . . .


...to continue to ROTATE IMAGE, start with step 5 under ROTATE IMAGE and follow the directions.

...to exit completely, press the  button twice.

...to adjust only the PARALLELOGRAM, follow steps 1 - 4 above, then press the  button, and follow steps 7 - 9


ROTATE IMAGE

ROTATE IMAGE under ADJUST SHAPE allows you to adjust one of the five preset options. These two options are PINCUSHION and BALANCED pincushion. Note: use this feature only when the picture is not square.

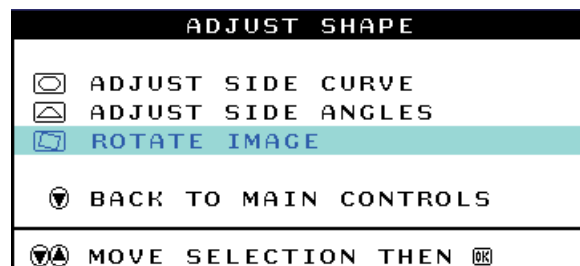
1) Press the  button on the monitor. The MAIN CONTROLS window appears.

2) Press the  button until ADJUST SHAPE is highlighted.



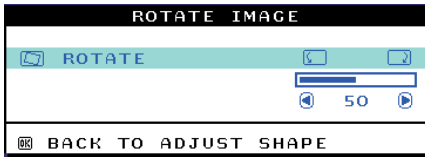
3) Press the  button. The ADJUST SHAPE window appears. ADJUST SIDE CURVE should be highlighted.

4) Press the  arrow until ROTATE IMAGE is highlighted.



◀◀ Go to cover page

5) Press the button. The ROTATE IMAGE window appears. ROTATE should be highlighted.



6) To adjust the rotation, press the or button.

7) When the rotation is adjusted, press the button to return to the ADJUST SHAPE window. BACK TO MAIN CONTROLS should be highlighted.

8) Press the button to return to MAIN CONTROLS.

Smart Help After returning to MAIN CONTROLS . . .

. . . to continue to ADJUST COLOR, press the button until ADJUST COLOR is highlighted. Next, start with step 3 under ADJUST COLOR and follow the directions.

...to exit completely, press the button twice.

ADJUST COLOR

Your monitor has three preset options you can choose from. The first option is for GENERAL USE, which is fine for most applications. The second option is for IMAGE MANAGEMENT, which includes projects such as desktop publishing, viewing a DVD from your DVD player or pictures on the World Wide Web, and playing video games. The third option is for PHOTO RETOUCH, which is for working with pictures you have imported into your computer and want to alter. When you select one of these options, the monitor automatically adjusts itself to that option. There is also a fourth option, USER PRESET, which allows you to adjust the colors on your screen to a setting you desire.

1) Press the button on the monitor. The MAIN CONTROLS window appears.

2) Press the button until ADJUST COLOR is highlighted

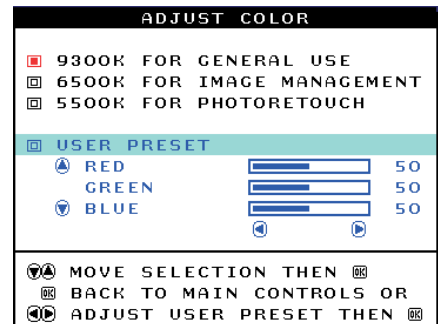


3) Press the button. The ADJUST COLOR window appears.



4) Press the or button to highlight 9300K for GENERAL USE, 6500K for IMAGE MANAGEMENT, 5500K for PHOTO RETOUCH, or USER PRESET.

5) Once you have highlighted GENERAL USE, IMAGE MANAGEMENT, or PHOTO RETOUCH, press the button to confirm your selection and return to the MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.



6a) If USER PRESET is highlighted, press the button to highlight RED. Next, press the LEFT CURSOR or RIGHT CURSOR button to adjust the color red.

6b) When finished with RED, press the button to highlight GREEN. Next, press the or button to adjust the color green.

6c) When finished GREEN, press the button to highlight BLUE. Next, press the or button to adjust the color blue.

6d) When all adjustments are complete, press the button to confirm your adjustments and return to the MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.

Smart Help After returning to MAIN CONTROLS. . .

. . . to continue to RESET TO FACTORY SETTINGS, press the button until RESET TO FACTORY SETTINGS is highlighted. Next, start with step 3 under RESET TO FACTORY SETTINGS.

. . . to exit completely, press the button.

RESET TO FACTORY SETTINGS

RESET TO FACTORY SETTINGS returns everything in all the windows to factory presets.

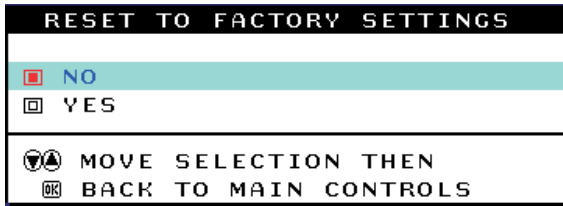
1) Press the button on the monitor. The MAIN CONTROLS window appears.

2) Press the button until RESET TO FACTORY SETTINGS is highlighted.



3) Press the button. The RESET TO FACTORY SETTINGS window appears.

- 4) Press the or button to select YES or NO. NO is the default. YES returns all settings to their original factory adjustments.



- 5) Press the button to confirm your selection and return to the MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.

Smart Help After returning to MAIN CONTROLS . . .

. . . to continue to EXTRA CONTROLS, press the button until EXTRA CONTROLS is highlighted. Next, start with step 3 under EXTRA CONTROLS.

. . . to exit completely, press the button.

EXTRA CONTROLS

DEGAUSS

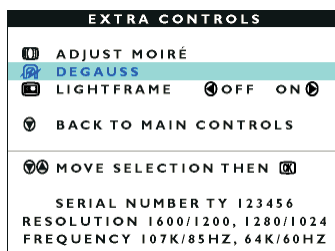
EXTRA CONTROLS is a set of three features, including DEGAUSS. Degaussing removes electromagnetic build up that may distort the color on your screen.

- 1) Press the button on the monitor. The MAIN CONTROLS window appears.
- 2) Press the button until EXTRA CONTROLS is highlighted.



- 3) Press the button. The EXTRA CONTROLS window appears. MOIRE will Be highlighted.

- 4) Press the button to highlight DEGAUSS.



- 5) To degauss your screen, press the button. Your screen will be degaussed, then the MAIN CONTROLS window will reappear. CLOSE MAIN CONTROLS will be highlighted.

Smart Help After returning to MAIN CONTROLS . . .

. . . to continue to ADJUST MOIRE, press the button until EXTRA CONTROLS is highlighted. Next, start with step 3 under EXTRA CONTROLS, ADJUST MOIRE.

. . . to exit completely, press the button.

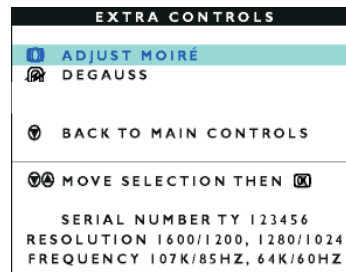
ADJUST MOIRE

EXTRA CONTROLS is a set of three features, including ADJUST MOIRE. Moire is a fringe pattern arising from the interference between two superimposed line patterns. To adjust your moire, follow the steps below. Note: Use only if necessary. By activating ADJUST MOIRE, sharpness can be affected.

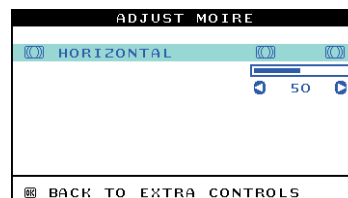
- 1) Press the button on the monitor. The MAIN CONTROLS window appears.
- 2) Press the DOWN CURSOR button until EXTRA CONTROLS is highlighted.



- 3) Press the button. The EXTRA CONTROLS window appears. ADJUST MOIRE will be highlighted.



- 4) Press the button. The ADJUST MOIRE window appears. HORIZONTAL will be highlighted.



- 5) To adjust the horizontal moire, press the or button


- 7) When the moire is adjusted, press the button to return to the EXTRA CONTROLS window. BACK TO MAIN CONTROLS will be highlighted.

After returning to MAIN CONTROLS to exit completely, press the button.

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ADJUST CONVERGENCE

EXTRA CONTROLS is a set of features, including ADJUST CONVERGENCE. Convergence is a process by which a color is created by blending other colors. For example, white is created by blending red, blue, and green. If these colors do not completely blend together (converge) then you may see unwanted red, green, or blue lines or dots. To adjust the convergence, follow the steps below. Note: Use only if necessary. Remember: you must degauss the monitor BEFORE adjusting the convergence.

1) Press the  button on the monitor. The MAIN CONTROLS window appears.


2) Press the  button until EXTRA CONTROLS is highlighted.

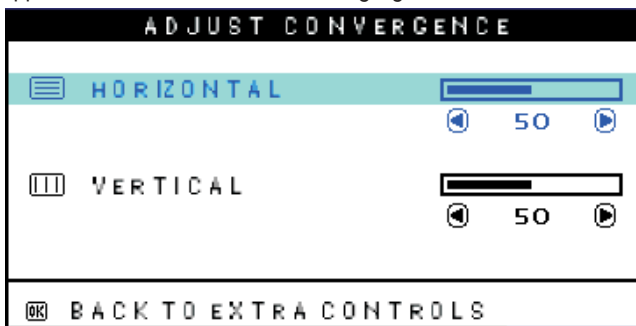


3) Press the  button. The EXTRA CONTROLS window appears. DEGAUSS is highlighted. Note: If you have not degaussed the monitor, please follow the steps under the Extra Controls - Degauss section of this manual before adjusting the convergence.


4) Press the  button until ADJUST CONVERGENCE is highlighted.

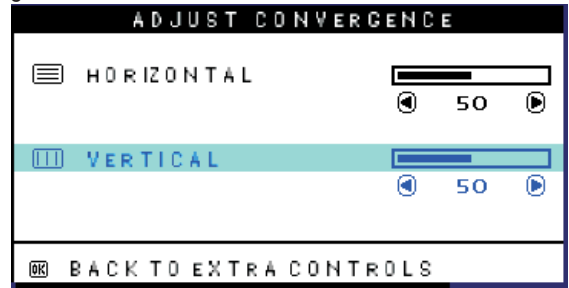




5) Press the  button. The ADJUST CONVERGENCE window appears. ADJUST HORIZONTAL is highlighted.




6) To adjust the horizontal convergence, press the  or  button.

7) When the horizontal convergence is adjusted, press the  button to highlight VERTICAL CONVERGENCE.




8) To adjust the vertical convergence, press the  or  button.

9) When the vertical convergence is adjusted, press the  button to

return to the EXTRA CONTROLS window. BACK TO MAIN CONTROLS is highlighted.

Smart Help

After returning to EXTRA CONTROLS . . .

. . . to continue to ADJUST PURITY, press the  button until ADJUST PURITY is highlighted. Next, start with step 4 under EXTRA CONTROLS - ADJUST PURITY.

Note: If you have not degaussed the monitor, please follow the steps under the Extra Controls - Degauss section of this manual before adjusting the purity.

. . . to exit completely, press the  button twice.

ADJUST PURITY

EXTRA CONTROLS is a set of features, including ADJUST PURITY. Purity is a process by which colors appear clear and untainted, especially in the four corners of the monitor. Purity can be affected by such things as the presence of a magnetic source near the monitor or even by the ambient room temperature. For example, you might see the color red in a corner of the monitor screen where you should see only a pure white. To adjust the purity, follow the steps below. Note: Use only if necessary. Remember: you must degauss the monitor BEFORE adjusting the purity.

1) Press the  button on the monitor. The MAIN CONTROLS window appears.

2) Press the  button until EXTRA CONTROLS is highlighted.



3) Press the  button. The EXTRA CONTROLS window appears.

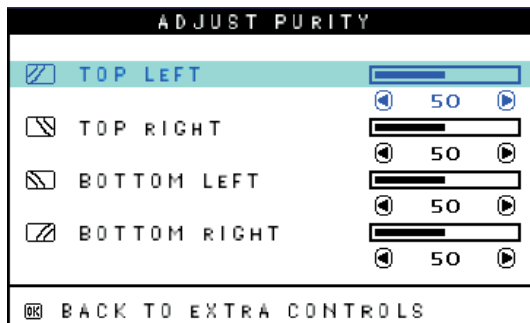
DEGAUSS is highlighted. Note: If you have not degaussed the monitor, please follow the steps under the Extra Controls - Degauss section of this manual before adjusting the purity.

4) Press the  button until ADJUST PURITY is highlighted.

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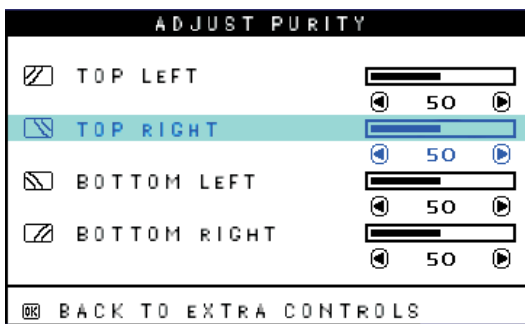


5) Press the . The ADJUST PURITY window appears. TOP LEFT is highlighted.



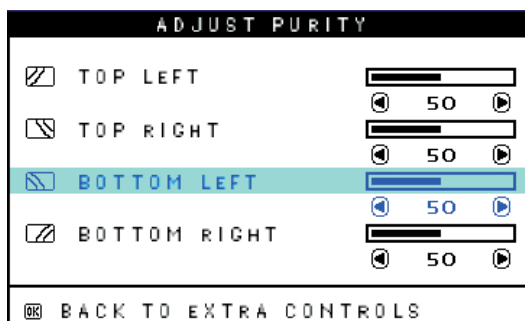
6) To adjust the top left purity, press the or button.

7) When the top left purity is adjusted, press the button to highlight TOP RIGHT.



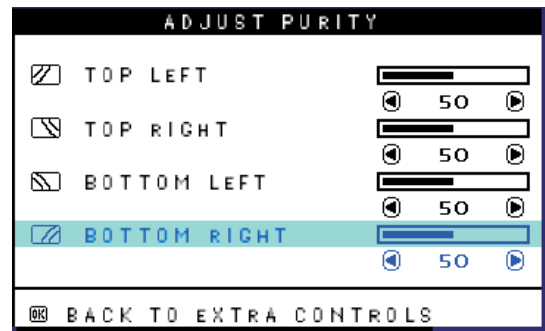
8) To adjust the top right purity, press the or button.

9) When the top right purity is adjusted, press the button to highlight BOTTOM LEFT.



10) To adjust the bottom left purity, press the or button.

11) When the bottom left purity is adjusted, press the button to highlight BOTTOM RIGHT.



12) To adjust the bottom right purity, press the or button.

13) When the bottom right purity is adjusted, press the button

to return to the EXTRA CONTROLS window. BACK TO MAIN CONTROLS is highlighted.

Smart Help

After returning to EXTRA CONTROLS ...

... to continue to ADJUST PURITY, press the button until AUTO

CALIBRATE is highlighted. Next, start with step 4 under EXTRA CONTROLS - AUTO CALIBRATE.

... to exit completely, press the button twice.

AUTO CALIBRATE

EXTRA CONTROLS is a set of three features, including AUTO CALIBRATE. Auto Calibrate regularly readjusts the color to its original value for any of the ADJUST COLOR selections, including USER PRESET. AUTO CALIBRATE also adjusts the luminance and black level of the monitor, so that all three items remain at original settings. This helps extend the useful life of the monitor. The calibration process takes less than 6 seconds to complete.

1) Press the button on the monitor. The MAIN CONTROLS window appears.

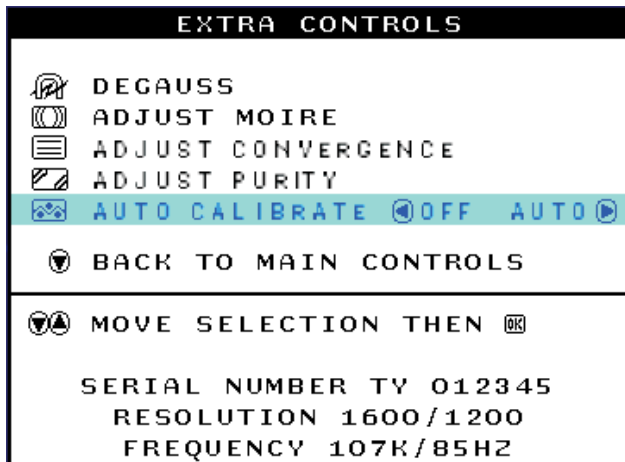
2) Press the button until EXTRA CONTROLS is highlighted.



3) Press the button. The EXTRA CONTROLS window appears. DEGAUSS will be highlighted.

4) Press the button until AUTO CALIBRATE is highlighted.

◀◀ Go to cover page



- 5) Press the ◀ or ▶ button to select OFF or AUTO.
- 6) When the selection is made, press the OK button to confirm your selection and return to the MAIN CONTROLS window. CLOSE MAIN WINDOW will be highlighted.
- 7) Press the OK button to exit the MAIN CONTROLS window.

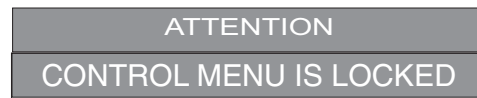
Smart Help After returning to MAIN CONTROLS . . .
 . . . to exit completely, press the OK button.

CLOSE MAIN CONTROLS



To lock (disable) OSD function:

- Press OSD button "OK" for over 15 seconds to lock the OSD function. Release it, then OSD comes on the screen as below.



To unlock (enable) OSD function:

- Press OSD button "OK" for over 15 seconds again to unlock the OSD function. Release it, then OSD comes on the screen as below.

Disable/Enable all the WARNING SIGNAL & Access Service mode (burn in mode) :

To disable all the WARNING SIGNAL :

- Disconnect the Interface cable of the monitor (Monitor is ON.).
- Press OSD button "OK" for over 15 seconds to disable all the WARNING SIGNAL. Then release the "OSD" button.
- If it is successful, then the signal " NO SIGNAL INPUT FROM INPUT A " disappeared to enter power saving-off mode.

To enable all the WARNING SIGNAL :

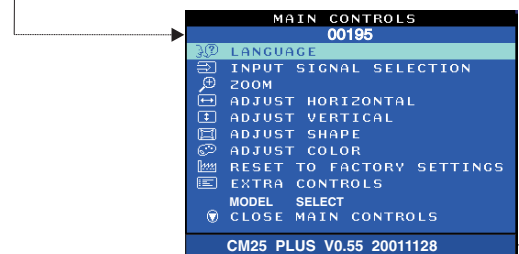
- After disconnect the Interface cable of the monitor, then Monitor is powered ON.
- If it is successful, the signal " NO SIGNAL INPUT FROM INPUT A " comes on the screen again later.

Access Service Mode & Burn in mode

Firstly, get into Factory Adjustment Mode.

Push LEFT ◀ & RIGHT ▶ buttons at the same time for over 15 seconds and release them.

The factory message appears at the bottom of the main OSD menu. (for example : CM25 PLUS V0.55 20011128 ; 00195 is M.T.B.F. in HOUR unit)




- Disconnect the Interface cable of the monitor.
- Push LEFT ◀ & RIGHT ▶ buttons at the same time, then power ON.
- If it is successful, the signal " " comes on the screen later. (Background is white.)

Leave "burn in MODE" :

- Reconnect the interface cable to PC, then the "burn in MODE" disappear.

1. Safety Instructions for Repairs

1.1 Safety regulations require that during a repair:

- The set should be connected to the mains via an isolating transformer.
- Safety components, indicated by the symbol , should be replaced by components identical to the original ones.
- When replacing the CRT, safety goggles must be worn.

1.2 Safety regulations require also that after a repair:

- The set should be returned in its original condition.
- The cabinet should be checked for defects to avoid touching, by the customer, of inner parts.
- The insulation of the mains lead should be checked for external damage.
- The mains lead strain relief should be checked on its function.
- The cable form and EHT cable are routed correctly and fixed with the mounted cable clamps in order to avoid touching of the CRT, hot components or heat sinks.

* Thermally loaded solder joints should be checked and resoldered where necessary. This includes components like LOT, the line output transistor, fly-back capacitor.

2. Maintenance Instructions

It is recommended to have a maintenance inspection carried out periodically by a qualified service employee. The interval depends on the usage conditions.

- During the maintenance inspection the above mentioned "safety instructions for repair" should be carried out. The power supply and deflection circuitry on the chassis, the CRT panel and the neck of the CRT should be cleaned.

When cleaning the monitor on the outside:

- Always disconnect the monitor from the mains.
 - Always use a damp AND NOT WET lint-free cloth.
 - To clean the screen, apply a household glass cleaner to a cloth and then wipe the screen.
 - Do not use solvents or abrasives on the monitor.
- It might discolour the cabinet and/or affect the anti glare treatment on your screen.

3. Warnings

3.1 In order to prevent damage to ICs and transistors, all high-voltage flash-overs must be avoided. In order to prevent damage to the picture tube, the method shown in Fig 3.1 should be used to discharge the picture tube. Use a high-voltage probe and a multimeter (position DC-V). Discharge until the meter reading is 0V (after approx 30s).

3.2 ESD

All ICs and many other semiconductors are sensitive to electrostatic discharges (ESD). Careless handling during repair can drastically shorten the life. Make sure that during repair you are connected by a pulse band with resistance to the same potential as the earth of the unit. Keep components and tools also at this same potential.

3.3 Be careful when taking measurements in the high-voltage section

and on the picture tube panel.

3.4 Never replace modules or other components while the unit is switched on.

3.5 When making settings, use plastic rather than metal tools. This will prevent any short-circuit and the danger of a circuit becomes unstable.

3.6 After repair the wiring should be fastened once more in the cable clamps for this purpose.

3.7 Together with the deflection unit the picture tube is used as an integrated unit. Adjustment of this unit during repair is therefore not recommended.

4. Notes

The semiconductors indicated in the circuit diagram(s) and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

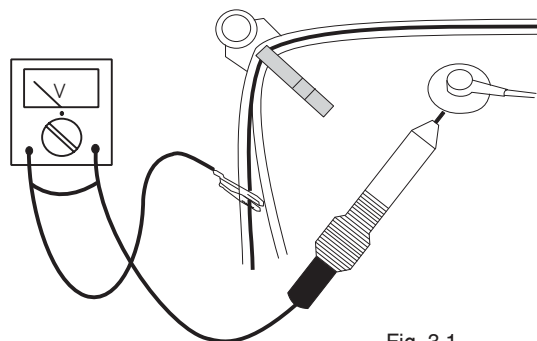


Fig. 3.1

DDC DATA

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EDID log file

Vendor/Product Identification
ID Manufacturer Name : PHL
ID Product Code : 000A(HEX.)
ID Serial Number : 123456(DEC.)
Week of Manufacture : 10
Year of Manufacture : 2002

EDID Version, Revision
Version : 1
Revision : 3

Basic Display Parameters/Features
Video Input Definition : Analog Video Input
0.700V/0.000V (0.70Vpp)
without Blank-to-Black Setup
Separate Sync
Composite Sync
without Sync on Green
no Serration required
Maximum H Image Size : 41 cm
Maximum V Image Size : 30 cm
Display Transfer Characteristic: 2.72
(gamma)

Feature Support (DPMS) : Standby
Suspend
Active Off

Display Type : RGB color display
GTF supported : Based on GTF standard

Color Characteristics
Red X coordinate : 0.622
Red Y coordinate : 0.339
Green X coordinate : 0.279
Green Y coordinate : 0.6
Blue X coordinate : 0.149
Blue Y coordinate : 0.072
White X coordinate : 0.283
White Y coordinate : 0.297

Established Timings
Established Timings I : 720 x 400 @70Hz (VGA,IBM)
640 x 480 @60Hz (VGA,IBM)
640 x 480 @72Hz (VESA)
640 x 480 @75Hz (VESA)
800 x 600 @60Hz (VESA)
Established timings II : 800 x 600 @72Hz (VESA)
800 x 600 @75Hz (VESA)
832 x 624 @75Hz (Mac II)
1024 x 768 @60Hz (VESA)
1024 x 768 @70Hz (VESA)
1024 x 768 @75Hz (VESA)
1280 x 1024 @75Hz (VESA)
Manufacturer's timings :1152 x 870 @75Hz (Mac II)

Standard Timing Identification #1
Horizontal active pixels : 1920
Aspect Ratio : 4:3
Refresh Rate : 75

Standard Timing Identification #2
Horizontal active pixels : 1792
Aspect Ratio : 4:3
Refresh Rate : 75

Standard Timing Identification #3
Horizontal active pixels : 1600
Aspect Ratio : 4:3
Refresh Rate : 75

Standard Timing Identification #4
Horizontal active pixels : 1280
Aspect Ratio : 5:4
Refresh Rate : 85

Standard Timing Identification #5
Horizontal active pixels : 2048
Aspect Ratio : 4:3
Refresh Rate : 75

Standard Timing Identification #6
Horizontal active pixels : 1024
Aspect Ratio : 4:3
Refresh Rate : 85

Standard Timing Identification #7
Horizontal active pixels : 800
Aspect Ratio : 4:3
Refresh Rate : 85

Standard Timing Identification #8
Horizontal active pixels : 1600
Aspect Ratio : 4:3
Refresh Rate : 85

Detailed Timing #1
Pixel Clock (MHz) : 355.03
H Active (pixels) : 2048
H Blanking (pixels) : 683
V Active (lines) : 1536
V Blanking (lines) : 89
H Sync Offset (F Porch) (pixels):124
H Sync Pulse Width (pixels) : 222
V Sync Offset (F Porch) (lines): 20
V Sync Pulse Width (lines) : 3
H Image Size (mm) : 392
V Image Size (mm) : 294
H Border (pixels) : 0
V Border (lines) : 0
Flags : Non-interlaced
Normal Display, No stereo
Digital Seperate Sync
Positive V Sync
Positive H Sync

Monitor Descriptor #2	
Serial Number	: TY 123456

Monitor Descriptor #3
Monitor Name : Philips 202P4

Monitor Descriptor #4
:

Monitor Range Limits
Min. Vt rate Hz : 50
Max. Vt rate Hz : 160
Min. Horiz. rate kHz : 30
Max.Horiz. rate kHz : 130
Max. Supported Pixel : 360
No secondary GTF timing formula supported.
Extension Flag : 0
Check sum : 0D (HEX.)

EDID data for Mitsubishi CRT

0: 00 1: ff 2: ff 3: ff 4: ff 5: ff 6: ff 7: 00
8: 41 9: 0c 10: 0a 11: 00 12: 40 13: e2 14: 01 15: 00
16: 0a 17: 0c 18: 01 19: 03 20: 6c 21: 29 22: 1e 23: ac
24: e9 25: 7a 26: 68 27: 9f 28: 56 29: 47 30: 99 31: 26
32: 12 33: 48 34: 4c 35: ad 36: ef 37: 80 38: d1 39: 4f
40: c1 41: 4f 42: a9 43: 4f 44: 81 45: 99 46: e1 47: 4f
48: 61 49: 59 50: 45 51: 59 52: a9 53: 59 54: af 55: 8a
56: 00 57: ab 58: 82 59: 00 60: 59 61: 60 62: 7c 63: de
64: 43 65: 04 66: 88 67: 26 68: 11 69: 00 70: 00 71: 1e
72: 00 73: 00 74: 00 75: ff 76: 00 77: 20 78: 54 79: 59
80: 20 81: 20 82: 31 83: 32 84: 33 85: 34 86: 35 87: 36
88: 0a 89: 20 90: 00 91: 00 92: 00 93: fc 94: 00 95: 50
96: 48 97: 49 98: 4c 99: 49 100: 50 101: 53 102: 20 103: 32
104: 30 105: 32 106: 50 107: 34 108: 00 109: 00 110: 00 111: fd
112: 00 113: 32 114: a0 115: 1e 116: 82 117: 24 118: 00 119: 0a
120: 20 121: 20 122: 20 123: 20 124: 20 125: 20 126: 00 127: 0d

DDC Instructions

1. General

DDC Data Re-programming

In case the main EEPROM with Software DDC which store all factory settings were replaced because a defect, repaired monitor the serial numbers have to be re-programmed.

It is advised to re-soldered the main EEPROM with Software DDC from the old board onto the new board if circuit board have been replaced, in this case the DDC data does not need to be re-programmed.

Additional information

Additional information about DDC (Display Data Channel) may be obtained from Video Electronics Standards Association (VESA). Extended Display Identification Data(EDID) information may be also obtained from VESA.

DDC EDID structure

For the monitor : Standard Version 3.0
Structure Version 1.3

2. System and equipment requirements

1. An i486 (or above) personal computer or compatible.
 2. Microsoft operation system Windows 95/98.
 3. EDID301.EXE program (3138 106 10103) shown as Fig. 1
 4. Software DDC Alignment kits (4822 310 11184) shown as Fig. 2.
- The kit contents: a. Alignment box x1
b. Printer cable x1
c. D-Sub cable x1

Note: The EDID301.EXE (Release Version 1.58, 20000818) is a windows-based program, which cannot be run in MS-DOS.

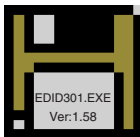


Figure 1 Diskette with EDID301.EXE

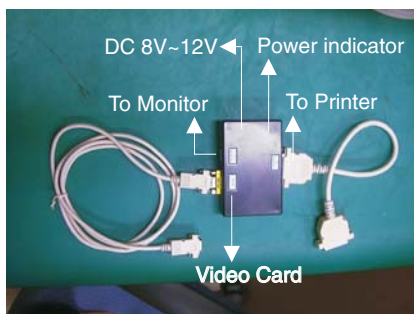
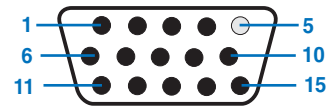


Fig. 2 Alignment Kits

3. Pin assignment

A. 15-pin D-Sub Connector

The 15-pin D-sub connector (male) of the signal cable on the 3rd row for DDC feature :



Pin No.	Assignment
1	Red video input
2	Green video input
3	Blue video input
4	Optional - connected to pin 10
5	Not connected
6	Red video ground
7	Green video ground
8	Blue video ground
9	+5 V
10	Sync ground
11	Optional - connected to pin 10
12	Serial data line (SDA)
13	H. Sync / H + V
14	V. Sync (VCLK for DDC)
15	Data clock line (SCL)

DDC Instructions (Continued)

4. Configuration and procedure

There is no Hardware DDC (DDC IC) anymore. Main EEPROM stores all factory settings and DDC data (EDID code) which is so called Software DDC. The following section describes the connection and procedure for Software DDC application. The main EEPROM can be re-programmed by enabling "factory memory data write" function on the DDC program (EDID301.EXE).

*** INITIALIZE ALIGNMENT BOX ***

In order to avoid that monitor entering power saving mode due to sync will cut off by alignment box, it is necessary to initialize alignment box before re-programming DDC Data. Following steps show you the procedures and connection.

Step 1: Supply 8~12V DC power source to the Alignment box by plugging a DC power cord or using batteries.

Step 2: Connecting printer cable and video cable of monitor as shown in Fig.3.

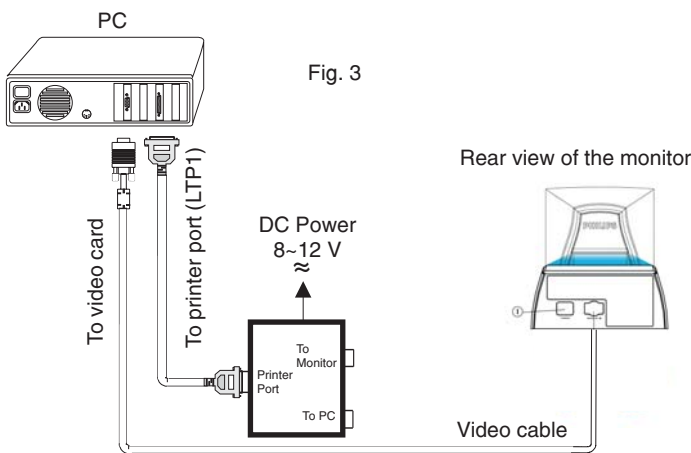


Fig. 3

Step 3: Installation of EDID301.EXE

Method 1: Start on DDC program

Start Microsoft Windows.

1. Insert the disk containing EDID301.EXE program into floppy disk drive.
2. Click **Start**, choose Run at start menu of Windows 95/98 as shown in Fig. 4.

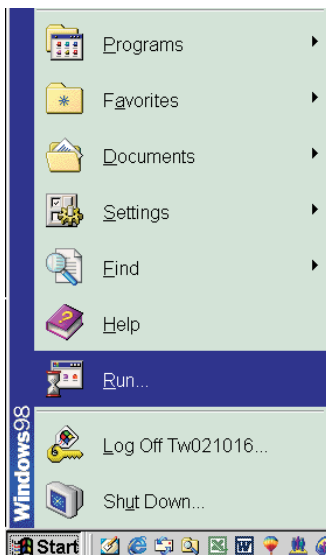


Fig. 4

3. At the submenu, type the letter of your computer's floppy disk drive followed by :EDID301 (for example, A:\EDID301, as shown in Fig. 5).

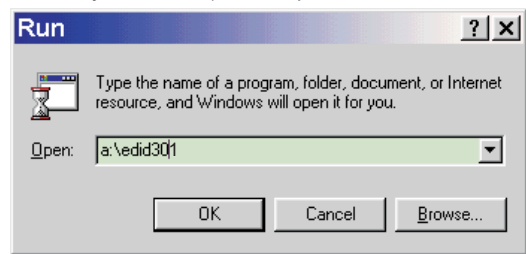


Fig. 5

4. Click **OK** button. The main menu appears (as shown in Fig. 6). **This is for initialize alignment box.**

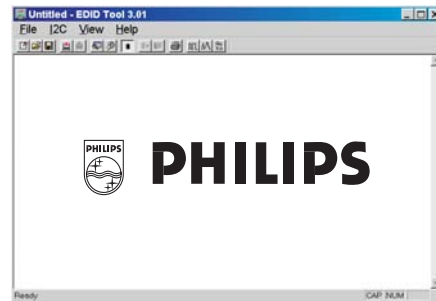


Fig. 6

Note 1: If the connection is improper, you will see the following error message (as shown in Fig. 7) before entering the main menu. Meanwhile, the (read EDID) function will be disable. At this time, please make sure all cables are connected correctly and fixedly, and the procedure has been performed properly.

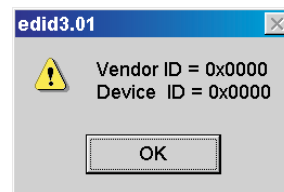


Fig. 7

Method 2: After create a shortcut of EDID301.EXE

- : Double click EDID301 icon (as shown in Fig. 8) which is on the screen of Windows Wallpaper. Bring up main menu of EDID301 as shown in Fig. 9. **This is for initialize alignment box.**



Fig. 8

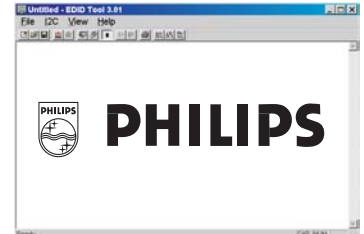
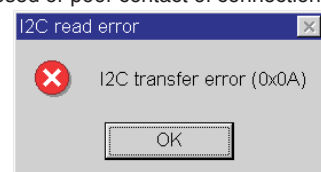


Fig. 9

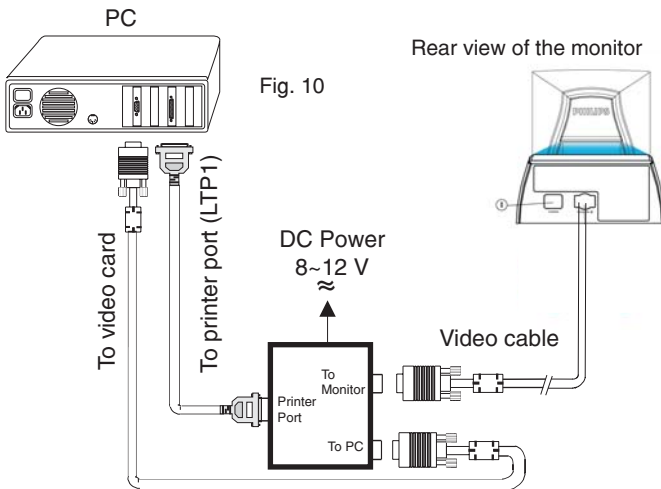
Note 2: During the loading, EDID301 will verify the EDID data which just loaded from monitor before proceed any further function, once the data structure of EDID can not be recognized, the following error message will appear on the screen as below. Please confirm following steps to avoid this message.

1. The data structure of EDID was incorrect.
2. DDC IC that you are trying to load data is empty.
3. Wrong communication channel has set at configuration setup windows.
4. Cables loosed or poor contact of connection.




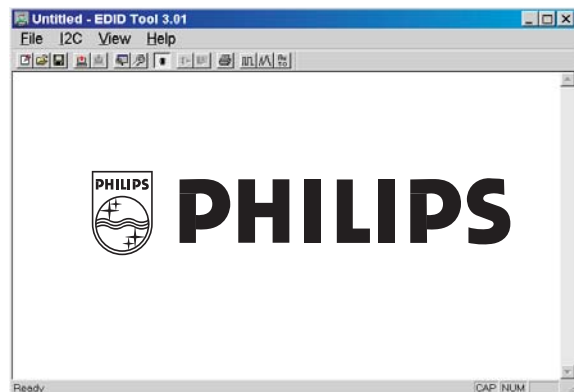
Re-programming EEPROM (Software DDC)

Step 1: After initialize alignment box, connecting all cables and box as shown in Fig. 10

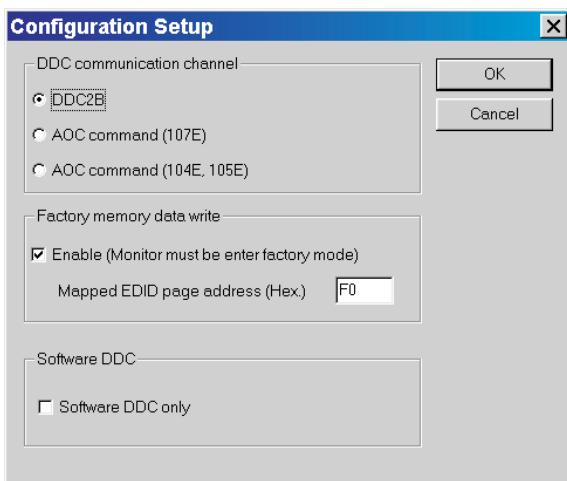


Step 2: Read DDC data from monitor


- 1-1 Click the left key of Mouse, or hit any key on the keyboard, then the characters disappear from the screen.
- 1-2 Click  icon as shown in Fig. 11 from the tool bar to bring up the "Configuration Setup" windows as shown in Fig. 12.

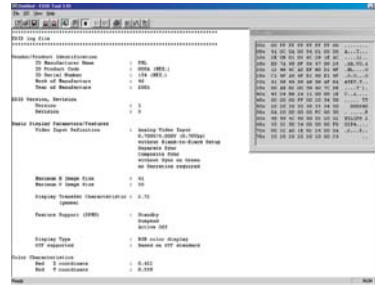


2. Select the DDC2B as the communication channel. Select "Enable" & fill out "F0" for Mapped EDID page address as shown in Fig. 12.




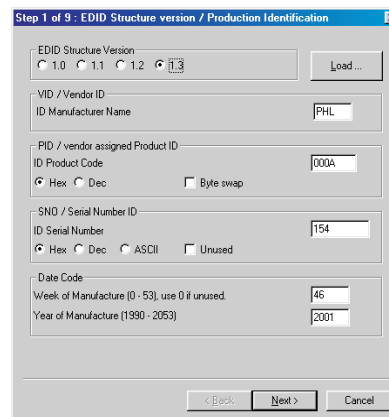
3. Click OK button to confirm your selection.

4. Click  icon (Read EDID function) to read DDC EDID data from monitor. The EDID codes will display on screen as shown in Fig. 13.



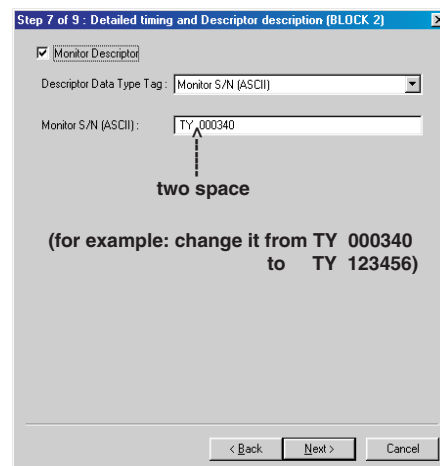
Step 3: Modify DDC data (verify EDID version, week, year)

1. Click  (new function) icon from the tool bar, bring up Step 1 of 9 as shown in Fig. 14. EDID301 DDC application provides the function selection and text change (select & fill out) from Step 1 to Step 9.

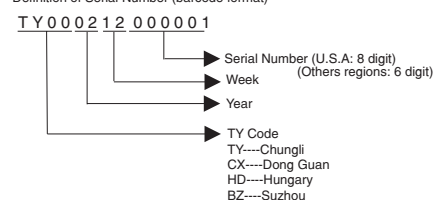


Step 4: Modify DDC data (Monitor Serial No.)

1. Click **Next** till the Step 7 of 9 window appears as shown in Fig. 15.
2. Fill out the new Serial No. (for example, TY 000340, TY 123456).
3. Click **Next** till the last step window appears, then click **Finish** to exit the Step window.




Definition of Serial Number (barcode format)



DDC Instructions

**Step 5: **Configuration Setup & Enter Factory Mode **
for "write EDID data"**

1. Click  icon from the tool bar to bring up the Configuration Setup windows again. Then, select "Software DDC only" as shown in Fig. 16. Click "OK".

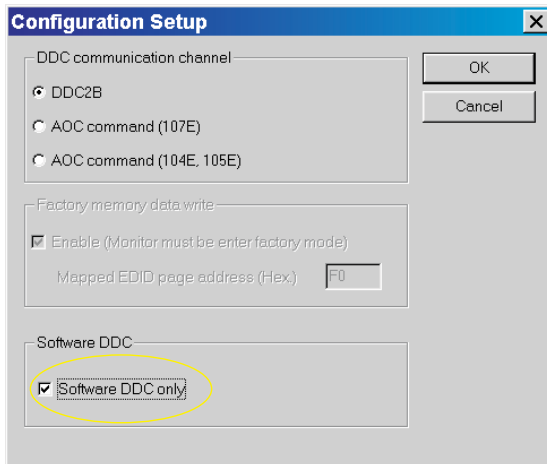


Fig. 16

If you do not select "Software DDC only", when you execute "write EDID", it will bring up an error message as below.

**To access factory mode**

1. Turn off monitor (don't turn off PC)
2. Press "◀▶" and "⏻" simultaneously on the front control panel, then press "⏻", wait till the OSD menu with characters CM25 PLUS V0.55 20011128 (below OSD menu) come on the screen of monitor.

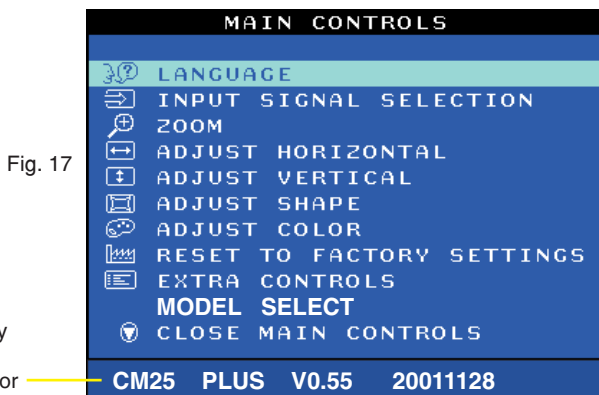




Fig. 17

Factory Mode Indicator






If OSD menu disappears on the screen of monitor, press "⏻" again (anytime), then the OSD menu comes on the screen again.

If you do not access "Factory mode", when you execute "write EDID", it will bring up an error message as below.

**Step 6: Write DDC data**

1. Click  (Write EDID) icon from the tool bar to write DDC data. Bring up "Writing 0%~100%, ready" a progressing bar on the left down corner.
2. Click  (Read EDID) to confirm it.

Step 7: Confirm Serial Number in User Mode

1. Press the  button to turn off the monitor. Press the  button again to turn on the monitor.
2. Press the  button to bring up the OSD Main Menu.
3. Press the  button to select Extra Controls, press the  button to confirm your selection.
4. Confirm the Serial Number "123456" is updated as shown in Fig. 18.

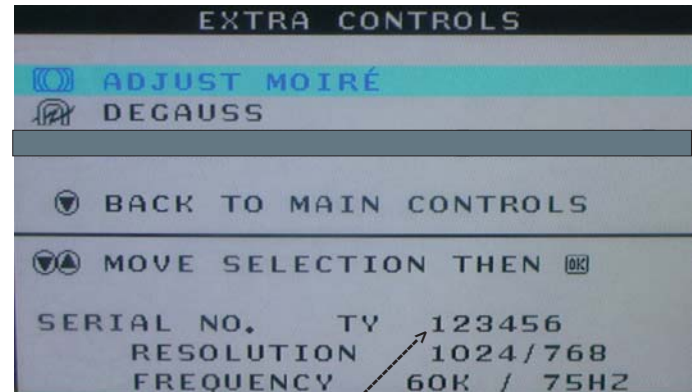



Fig. 18

Step 8: Save DDC data

Sometimes, you may need to save DDC data as a text file for using in other IC chip. To save DDC data, follow the steps below:

1. Click  (Save) icon (or click "file" -> "save as") from the tool bar and give a file name as shown in Fig. 19. The file type is EDID301 file (*.ddc) which can be open in WordPad. By using WordPad, the texts of DDC data & table (128 bytes, hex code) can be modified. If DDC TEXTS & HEX Table are completely correct, it can be saved as .ddc file to re-load it into EEPROM for DDC Data application.

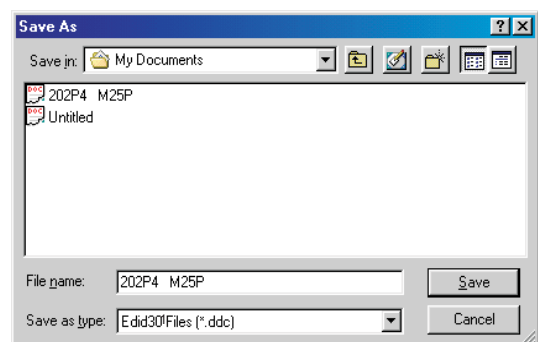




Fig. 19

2. Click **Save**.

Step 9: Load DDC data

1. Click  from the tool bar.
2. Select the file you want to open as shown in Fig. 20.
3. Click **Open**.
4. Access "Factory Mode" and enable "Software DDC only" as shown in Fig. 17 & Fig. 16.
5. Write EDID (click ).

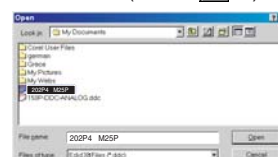


Fig. 20

0. General

When carry-out the electrical settings in many cases a video signal must be applied to the monitor. A computer with :

- ATI GPT-1600 (4822 397 10065), Mach 64 (up to 115kHz)

are used as the video signal source. The signal patterns are selected from the "service test software" package, see user guide 4822 727 21046 (GPT-1600).

0.1 This monitor has 36 factory-preset modes as below

.

RESOLUTION	f h	f v	RESOLUTION	f h	f v
640 x 480	31.469 kHz	59.941 Hz	1152 x 870	68.681 kHz	74.979 Hz
720 x 400	31.468 kHz	70.084 Hz	1856 x 1392	124.185KHz	85.000Hz
640 x 480	37.500 KHz	75.000 Hz	1920 x1440	128.520KHz	85.000Hz
640 x 480	37.861 kHz	72.810 Hz	1600 x 1200	75.000 kHz	60.000 Hz
800x600	37.879 kHz	60.317Hz	1280 x1024	79.976 kHz	75.024 Hz
640 x 480	43.269 kHz	85.008 Hz	1600 x 1200	81.250 kHz	65.000 Hz
800 x 600	46.875 kHz	75.000 Hz	1792 x 1344	83.640 kHz	59.999 Hz
800 x 600	48.077 kHz	72.188 Hz	1920 x1440	120.56KHz	80.000Hz
1024 x 768	48.363 kHz	60.004 Hz	1856 x 1392	86.333 kHz	59.995 Hz
832 x 624	49.722 kHz	74.546 Hz	1600 x 1200	87.500 kHz	70.000 Hz
640 x 480	50.628 kHz	100.10 Hz	1920 x 1440	90.000 kHz	60.000 Hz
800 x 600	53.674 kHz	85.061 Hz	1280 x 1024	91.146 kHz	85.024 Hz
1024 x 768	56.476 kHz	70.069 Hz	1600 x 1200	93.750 kHz	75.000 Hz
1792 x 1344	119.935KHz	85.000Hz	1600 x 1200	106.250 kHz	85.000 Hz
1024 x 768	60.023 kHz	75.029 Hz	1792 x 1344	106.270 kHz	74.997 Hz
800 x 600	63.923 kHz	100.00 Hz	1920 x 1440	112.5 kHz	75.000 Hz
1280 x 1024	63.981 kHz	60.020 Hz	2048 x 1536	120.450 kHz	75.000 Hz
1024 x 768	68.677 kHz	84.997 Hz	2048 x 1536	130KHz	80Hz

0.2 With normal VGA card:

If not using the ATI card during repair or alignment, The service engineer also can use this service test software adapting with normal standard VGA adaptor and using standard VGA mode 640 x 480, 31.5 kHz/60 Hz (only) as signal source.

0.3 AC/DC Measurement:

The measurements for AC waveform and DC figure is based on 640 x 480 31.5 kHz/60 Hz resolution mode with test pattern "gray scale".

Power input: 110V AC

1. B+ supply voltage (3157) 230Vdc

- Apply a video signal in the 1024 x 768 with 69 kHz/85Hz mode.

- Select the "cross-hatch" pattern.

- Set the brightness control and the contrast control to the minimum position.

- Pre-set trimming potentiometer 3157(B+) and 3698(EHT) in mid-position.

- Set Vg2 (screen) to fully Counter-clockwise (zero beamcurrent).

- Connect a dc voltmeter between the joint of capacitor 2154 and ground (common ground).

- Set the B+ trimming potentiometer 3157 so that the reading on the dc voltmeter is 230 V +/- 0.2 Vdc.

2. High-voltage EHT (3698)

- Apply a video signal in the 1024 x 768 with 68.7 kHz/85Hz mode.

- Select the "cross-hatch" pattern.

- Set the brightness control and the contrast control to the minimum position.

- Turn off the power.

- Connect a "high-voltage voltmeter" between the high-voltage connection of the picture tube and earth.

- Turn on the power.

- Set the EHT trimming potentiometer 3661 so that the "high-voltage voltmeter" reads 27.0 kV +/- 0.2 kV .

- Turn off the power.

- Remove the "high-voltage voltmeter" from the picture tube.

- Turn on the power again.

3. Monitor the following auxiliary voltages.

SOURCE ACROSS C2362 + 8.0V +/- 0.5 VDC

SOURCE ACROSS C2143 + 5.0V +/- 0.5 VDC

SOURCE ACROSS C2361 + 12.0V +/- 0.5 VDC

SOURCE ACROSS C2134 + 15.1V +/- 1.0 VDC

SOURCE ACROSS C2137 - 15.4V +/- 1.0 VDC

SOURCE ACROSS D6143 "4" 6.1V +/- 0.5 VDC

SOURCE ACROSS C2131 + 230.0V +/- 1.5 VDC

SOURCE ACROSS C2133 + 82.0V +/- 2.0 VDC

4. General conditions for alignment

4.1 During all alignments, supply a distortion free AC mains voltage to set via an isolating transformer with low internal impedance.

4.2 Align in pre-warmed condition, at least 30 minutes warm-up with nominal picture brightness.

4.3 Purity, geometry and subsequent alignments should be carried out in magnetic cage with correct magnetic field.

Northern hemisphere : H=0, V=430+/-50 mG, Z=0

Southern hemisphere : H=0, V=-520+/-50 mG, Z=0

Equatorial Support : H=0, V=0 mG, Z=0

4.4 All voltages are to be measured or applied with respect to ground.

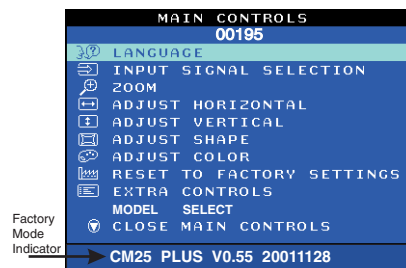
Note: Do not use heatsink as ground.

4.5 Adjust function controls "◀▶" to center position except for contrast control which should be set to MAX.

5. To access factory mode:

- Turn off monitor (don't turn off PC)

- Press "◀" and "▶" simultaneously on the front control panel, then press "⏏", wait till the OSD menu with characters "factory mode (below OSD menu)" come on the screen of monitor.



- If OSD menu disappears on the screen of monitor, press "⏏" again (anytime), then the OSD menu comes on the screen again.

- using "◀▶" : to select OSD menu.

◀▶ : to increase or decrease the setting.

- Using "⏏" to confirm the selection.

Electrical Adjustments (Continued)

Go to cover page

6 To leave factory mode

* After alignment of factory mode, turn off monitor (if you do not turn off monitor, the OSD menu is always at the factory mode), then turn on monitor again (at this moment, the OSD menu goes back to user mode).

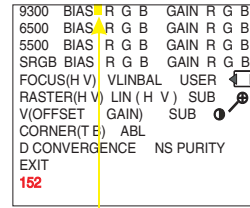


Fig. 2.2

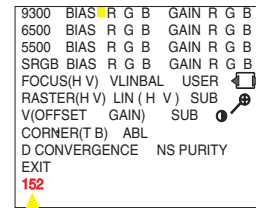


Fig. 2.3
(for example: 152 is value of "BIAS R")

7. Alignment of Vg2 cut-off point, white tracking (OSD control)

Equipment : 1. Video Test Generator-801GC (Quantum Data)
2. Color-analyzer (Minolta CA-100)

Vg2 [(screen), at the bottom of the L.O.T.].

* Apply a video signal in the 1024 x 768 with 69 kHz/85 Hz mode,
select the "full white pattern" (sizes 392 x 294 mm).
* Use color-analyzer (Minolta CA-100) to adjust cutoff and white uniformity.

OSD R/G/B cut-off and R/G/B gain can be accessed, with initial data:

9300°K

R cutoff = 30%, R gain = 70% (I²C)

G cutoff = 30%, G gain = 70% (I²C)

B cutoff = 30%, B gain = 70% (I²C)

6500°K

R cutoff = 30%, R gain = 70% (I²C)

G cutoff = 30%, G gain = 70% (I²C)

B cutoff = 30%, B gain = 70% (I²C)

5500°K

R cutoff = 30%, R gain = 70% (I²C)

G cutoff = 30%, G gain = 70% (I²C)

B cutoff = 30%, B gain = 70% (I²C)

Brightness = 50%, Sub-Contrast = 90%, ABL = 50% (I²C)

Step 1: To select the character "FACTORY MODE" as shown in Fig. 2.1, press "F4" to access the OSD menu for R/G/B gain & cutoff as shown in Fig. 2.2.

Step 2: Press "F4" for function selection as shown in Fig 2.3.

Step 3: Use "←→" to increase or decrease the value as shown in Fig. 2.3.



Fig.2.1

BIAS R G B : R(red) G(green) B(blue) cutoff
GAIN R G B : R(red) G(green) B(blue) gain
SRGB:R(red) G(green) B(blue) Colour Space for Storage.
V FOCUS : Vertical Focus
H FOCUS : Horizontal Focus
VLIN BAL : Vertical Linearity Balance
USER [] : Horizontal size range
RASTER H: Horizontal raster Shift
RASTER V: Vertical raster Shift
HLIN : Horizontal Linearity
V LIN : Vertical Linearity
SUB [] : Zoom Control range
SUB [] : Sub Contrast
V OFFSET : Vertical offset
V GAIN : Vertical Gain
ABL : Auto Beam Limit
T CORNER: Corner Correction of TOP
B CORNER: Corner Correction of BOTTOM
D CONVERGENCE: Digital CONVERGENCE(RESERVED).
NS PURITY: NS PURITY Correction

After pressing "←→", then Press "F4"

7.1 Connect the video input, set brightness control at 50% and contrast at minimum position (OSD), Vg2 at Minimum (counter clockwise, and ABL (OSD) at 50% position. Slowly increase Vg2 voltage until light output is at 0.1 Ft-L +/- 0.01Ft-L (Y=0.1 Ft-L, on the screen of CA-100).

7.2 (The screen of monitor is dark now)

: Press "F4" to show the OSD menu as shown in Fig. 2.1.
: Select the character "FACTORY MODE" to access the R/G/B adjustment as shown in Fig. 2.2 and Fig. 2.3.
: Adjust the cutoff of R/G/B to get 9300K (x=0.283 +/- 0.015, y=0.298 +/- 0.015), and brightness output at 0.07 +/- 0.01 Ft-L (Y=0.07Ft-L).

7.3 : Press "F4" to set contrast at maximum (100%).

: Adjust gain of R/G/B to get 9300K (x=0.283 +/- 0.015, y=0.298 +/- 0.015, don't care about the Y value)

7.4 Apply a small white square 10 x 10 cm pattern, brightness set to center (50%), and contrast at maximum (100%), adjust Sub-contrast control (OSD) to reach 34 +/- 1 Ft-L.

7.5 Apply full white pattern at 9300K, adjust ABL (OSD) to reach 32 +/- 1 Ft-L (contrast at maximum 100%, brightness at center 50%).

7.6 : Select the 6500K colour temperature as shown in Fig. 2.2.

: Adjust the R/G/B cutoff and R/G/B gain as shown in procedure 7.2~7.3 to get

R/G/B cutoff $x = 0.313 \pm 0.015$
 $y = 0.329 \pm 0.015$

R/G/B gain $x = 0.313 \pm 0.015$
 $y = 0.329 \pm 0.015$
 $Y = 30 \pm 1$ Ft-L(Adjust Sub-contrast control (OSD))

7.7 : Select the 5500K colour temperature as shown in Fig. 2.2.

: Adjust the R/G/B cutoff and R/G/B gain as shown in procedure 7.2~7.3 to get

R/G/B cutoff $x = 0.332 \pm 0.015$
 $y = 0.347 \pm 0.015$

R/G/B gain $x = 0.332 \pm 0.015$
 $y = 0.347 \pm 0.015$
 $Y = 27 \pm 1$ Ft-L(Adjust Sub-contrast control (OSD))

7.8 : Apply a small white square pattern , adjust SRGB color temperature to match with 6500K color temperature and adjust Sub-contrast(OSD) reach to (23 ± 1 ft-lb)

8. Picture geometry setting (factory pre-set modes)

- Apply a video signal with cross-hatch pattern.
- Apply a video signal in the 1024 x 768 with 69 kHz/85 Hz mode.
- Set brightness and contrast controls to their center positions (OSD control).

8.1 Horizontal geometry (OSD control)

- Adjust the H-width to 392 mm
- Adjust the H-phase to center position.

8.2 Vertical geometry (OSD control)

- Adjust vertical size to 294 mm
- Adjust V-phase to center position.

8.3 Trapezoid distortion (OSD control)

- Adjust the trapezoid to get optimal vertical lines.

8.4 Pincushion (OSD control)

- Adjust the pincushion to get optimal vertical line.

8.5 Parallelogram (OSD control)

- Adjust parallelogram so that vertical lines are vertical or symmetrically about the center vertical axis.

8.6 Unbalance-pin (OSD control)

- Adjust the unbalance-pin so that that vertical border lines are aligned symmetrically.

8.7 Rotation (OSD control)

- Adjust picture so that vertical tilt is less than ± 0.5 mm.

8.8 Top/Bottom corner(control)

- Adjust the top/bottom corner control to get optimum corner geometry.

8.9 Store the preset results by selecting the "exit" (OSD control).

8.10 Repeat the procedure 8.1 to 8.9 until all the preset timings have been adjusted completely

9. Focus adjustment

: Apply a video signal in the 1024 x 768 with 69 kHz/85 Hz mode

: Select " @ " pattern.

: Set the brightness at center (50%) and the contrast to 22 FL.

: Adjust focus potentiometers (top of L.O.T.) Focus 1 for horizontal focus and Focus 2 for vertical focus so that the picture at 2/3 of the diagonal lines (from center to four corners) of the displayed screen is as sharp as possible.

◀◀ Go to cover page

0. Location of the panel

0.1 Main panel (1160)

0.2 Video panel (1161)

1. General

To be able to perform measurements and repairs on the "circuit boards", the monitor should be placed in Service Position (fig. 1) first:

How to remove the back cover of monitor :

There are 2 screws in the lid [1 screw are at the right side of the monitor, The other 1 screw are at the left side of the monitor], to fix the front cabinet and back cover of the monitor.

Step 1: To open the lid at the right-upper side and 1screw in right-downer side of the monitor.(FIG.3)

Step 2: To open the lid at the left-upper side and 1screw in left-downer side of the monitor.(FIG.4)

Step 3: To remove the back cover, you can see FIG.5

Step 4: To remove the 13 screws on the metal shield, and remove the metal shield, you can see FIG.6.

Chassis :

- After remove the back cover & metal shield, you can see the inside of the monitor as Fig. 6.
- To remove 13 screws for service position as Fig. 5 to Fig. 8.
- Include remove bottom plate screw, then slide out chassis board and disconnect metal shield.

Video panel :

- After remove the metal frame (Fig. 5), to remove the metal shield on rear side of Video panel for measurement.

Main panel :

After remove the metal frame.

- To cut out cable tie and disconnect "video panel"
- To disconnect EHT cable
- To disconnect ground wire(1703) of video board.
- To disconnect M1311(4pin) to control panel.
- To disconnect M1501(4pin) yoke connector.
- To disconnect M1131(2pin) degaussing coil
- To slide out Main panel as Fig. 1.

Service position :

To get service position as Fig. 1 through Fig. 2 to Fig. 8.

2. Repair instructions

After the service position was obtained, all the panel's copper track side could be accessed.



Fig. 2

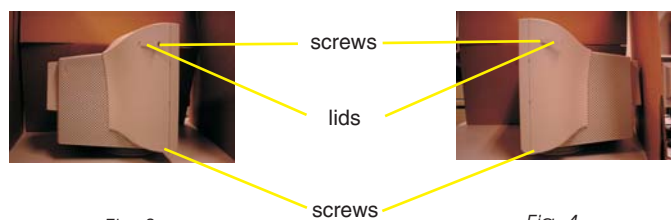


Fig. 3

Fig. 4



Fig. 5



Fig. 6

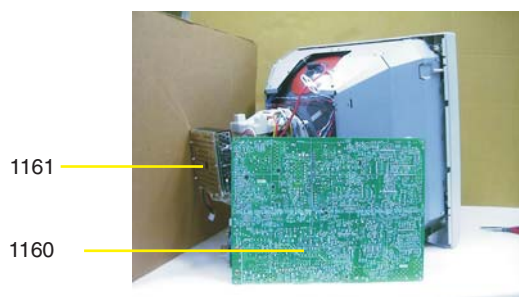


Fig. 1 Service Position

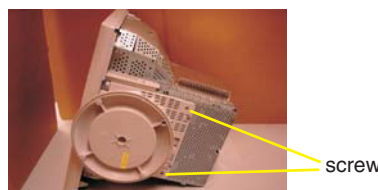


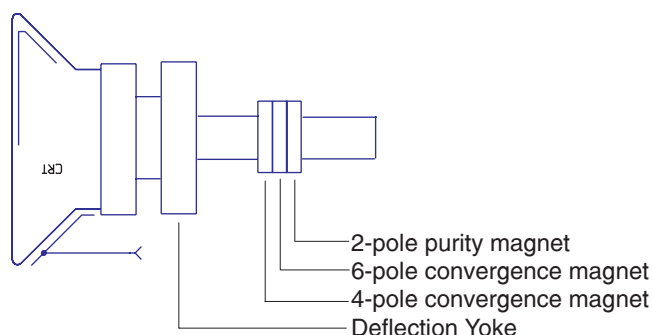
Fig. 7



Fig. 8

1. Purity adjustment

- Make sure the monitor is not exposed to any external magnetic field.
- Produce a full red pattern on the screen, adjust the purity magnet rings on the PCM assy (on CRT) to obtain a complete field of the color red. This is done by moving the two tabs (2-pole) in such a manner that they advance in an opposite direction but at the same time to obtain the same angle between the two tabs, which should be approximately 180 degree.
- Check by full green pattern and full blue pattern again to observe their respective color purity.



2. Static convergence

Introduction

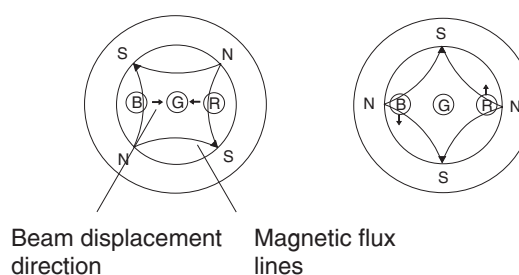
Slight deviation in the static convergence can be corrected by using two permanent pairs of magnets which are fitted around the neck of the CRT. These are the 4-pole magnet and the 6-pole magnet. The 4-pole magnet move the outermost electron beams (R and B) parallel in the opposite direction from the other. The 6-pole magnet moves the outermost electron beam (R, B and G) parallel in the opposite direction from the other. The magnetic field of the above magnets do not affect the center of the CRT neck.

Setting

- Before the static convergence setting can be made, the monitor must be switched on for 30 minutes.
- The focus setting must be made correctly.
- Signal: 640 * 480, 31.5 kHz/60 Hz mode.
- Set the tabs of the 4-pole magnet in the neutral position. This is when the tabs are opposite one another. In this position the magnets do not affect the deflection of the R and B electron beams.
- Set the tabs of the 6-pole magnet in the neutral position. This is when the tabs are opposite one another. In this position the magnets do not affect the deflection of the R, B, and G electron beams.
- First set the 4-pole magnet optimally.
- Then set the 6-pole magnet optimally.
- If the convergence is not now optimal, then adjust to the optimal setting with the 4-pole magnet and then with the 6- Pole magnet again.
- Set the tabs of the 6-pole magnet in the neutral position. This is when the tabs are opposite one another. In this position the magnets do not affect the deflection of the R, B, and G electron beams.
- First set the 4-pole magnet optimally.
- Then set the 6-pole magnet optimally.
- If the convergence is not now optimal, then adjust to the optimal setting with the 4-pole magnet and then with the 6- pole magnet again.

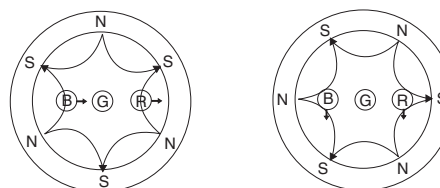
4-pole

Beam motion produced by the 4-pole convergence magnet



6-pole

Beam motion produced by the 6- pole convergence magnet



Go to cover page

All units that are returned for service or repair must pass the original manufactures safety tests. Safety testing requires both *Hipot* and *Ground Continuity* testing.

HI-POT TEST INSTRUCTION

1. Application requirements

- 1.1 All mains operated products must pass the Hi-Pot test as described in this instruction.
- 1.2 This test must be performed again after the covers have been refitted following the repair, inspection or modification of the product.

2. Test method

2.1 Connecting conditions

- 2.1.1 The test specified must be applied between the parallel-blade plug of the mainscord and all accessible metal parts of the product.
- 2.1.2 Before carrying out the test, reliable conductive connections must be ensured and thereafter be maintained throughout the test period.
- 2.1.3 The mains switch(es) must be in the "ON" position.

2.2 Test Requirements

All products should be HiPot and Ground Continuity tested as follows:

Condition	HiPot Test for products where the mains input range is Full range(or 220V AC)	HiPot Test for products where the mains input is 110V AC(USA type)	Ground Continuity Test requirement
Test voltage	2820VDC (2000VAC)	1700VDC (1200VAC)	Test current: 25A,AC Test time: 3 seconds(min.) Resistance required: $\leq 0.09 + R$ ohm, R is the resistance of the mains cord.
Test time (min.)	3 seconds	1 second	
Trip current (Tester)	set at 100 uA for Max. limitation; set at 0.1 uA for Min. limitation	5 mA	
Ramp time	set at 2 seconds		

- 2.2.1 The test with AC voltage is only for production purpose, **Service center shall use DC voltage.**
- 2.2.2 The minimum test duration for Quality Control Inspector must be 1 minute. No breakdown during the test.
- 2.2.3 The test voltage must be maintained within the specified voltage + 5%.
- 2.2.4 The grounding blade or pin of mains plug must be conducted with accessible metal parts.

3. Equipments and Connection

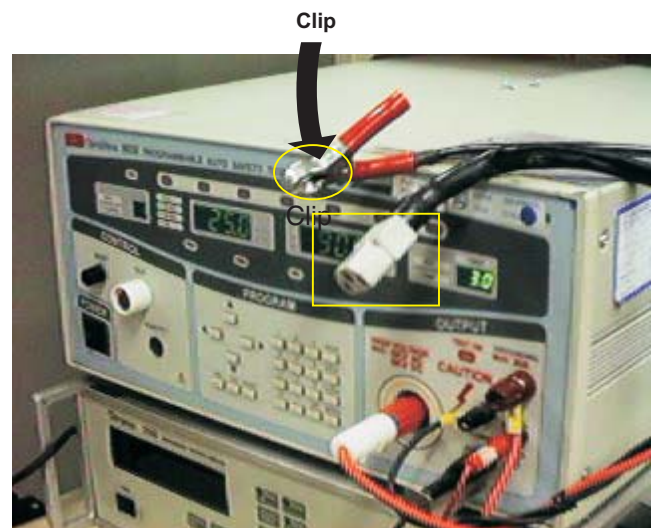
3.1. Equipments

For example :

- ChenHwa 9032 PROGRAMMABLE AUTO SAFETY TESTER
- ChenHwa 510B Digital Grounding Continuity Tester
- ChenHwa 901 (AC Hi-pot test), 902 (AC, DC Hi-pot test) Withstanding Tester

3.2. Connection

- * Turn on the power switch of monitor before Hipot and Ground Continuity testing.



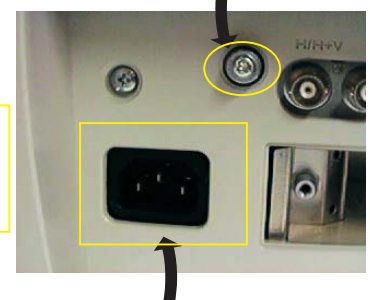
(ChenHwa 9032 tester)

Video cable



Connect the "video cable" or "grounding screw" to the CLIP on your tester.

Grounding screw



Connect the power cord to the monitor.

4. Recording

(Rear view of monitor)

Hipot and Ground Continuity testing records have to be kept for a period of 10 years.

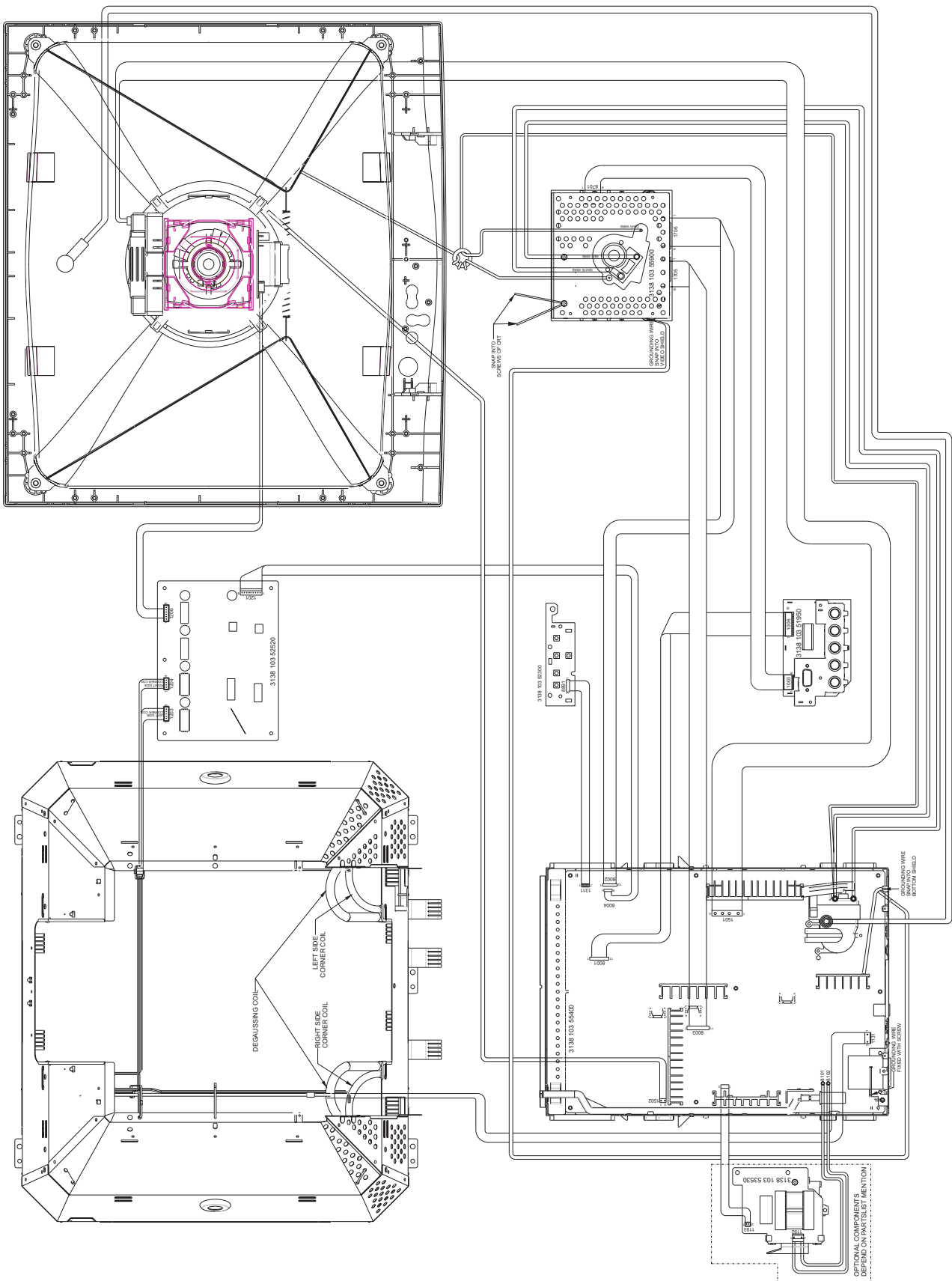
Wiring Diagram

202P4 M25P

29

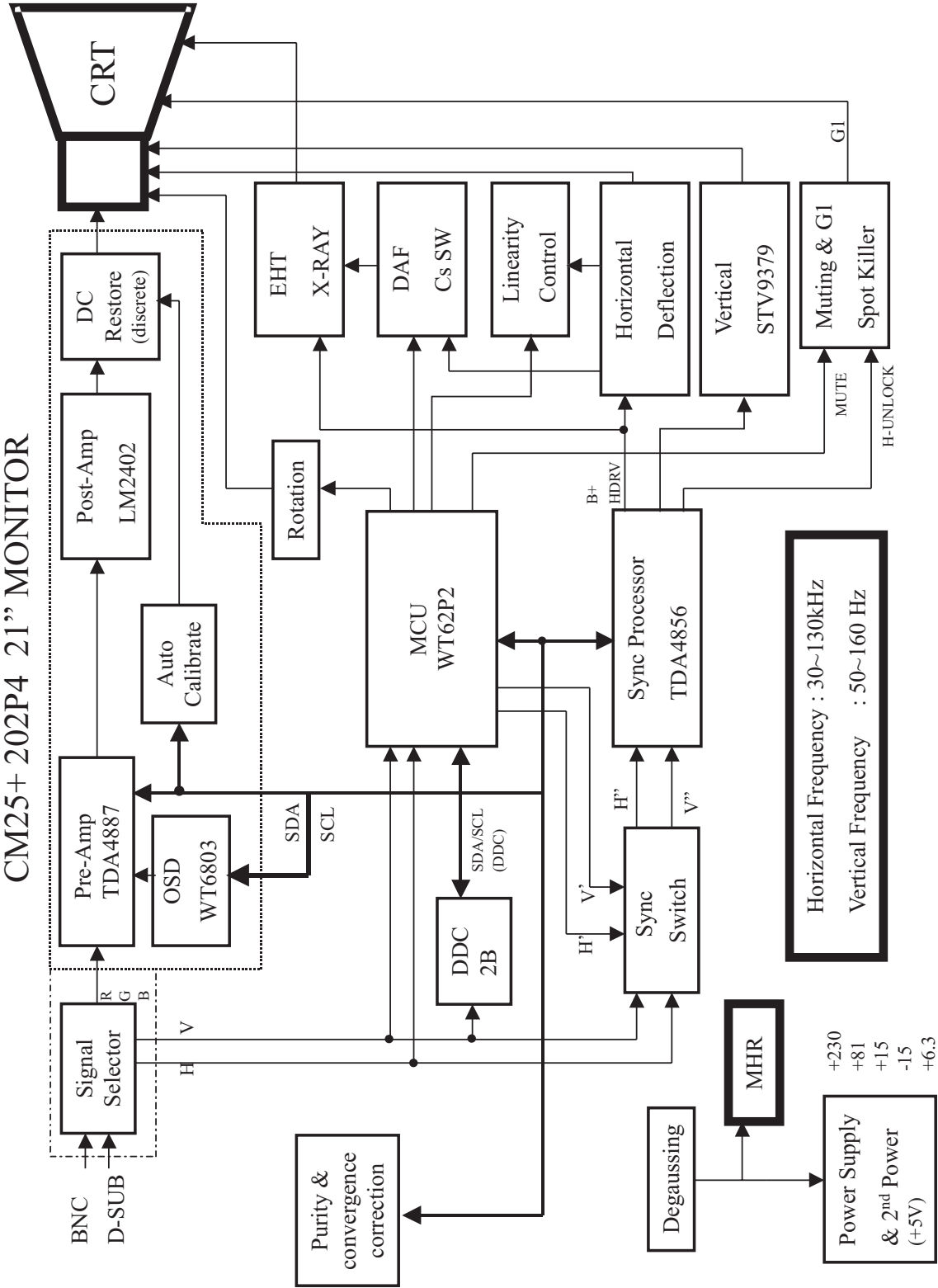
[Go to cover page](#)

(For reference only)



Block Diagram

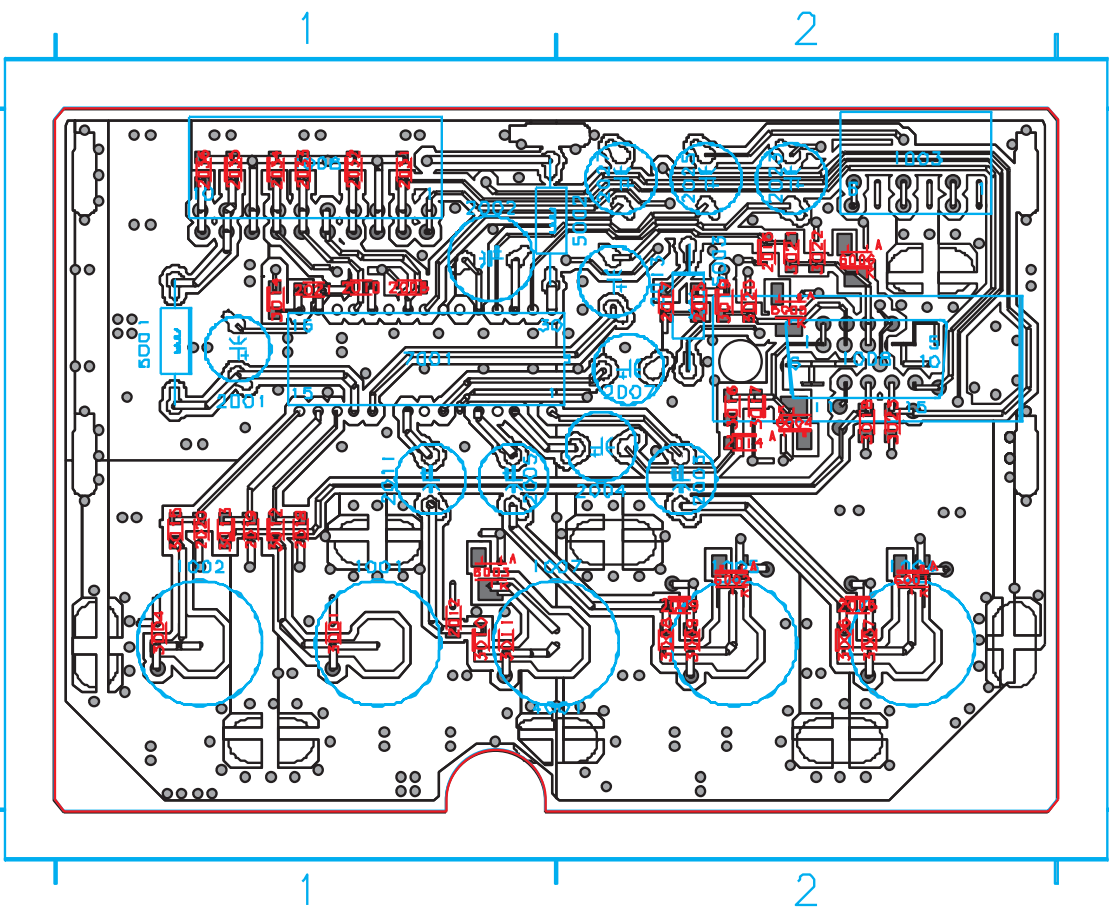
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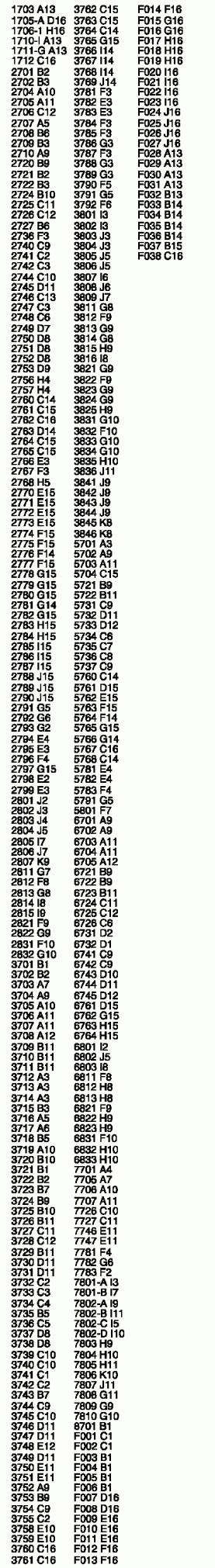
PCB (A1)

202P4 M25P 3

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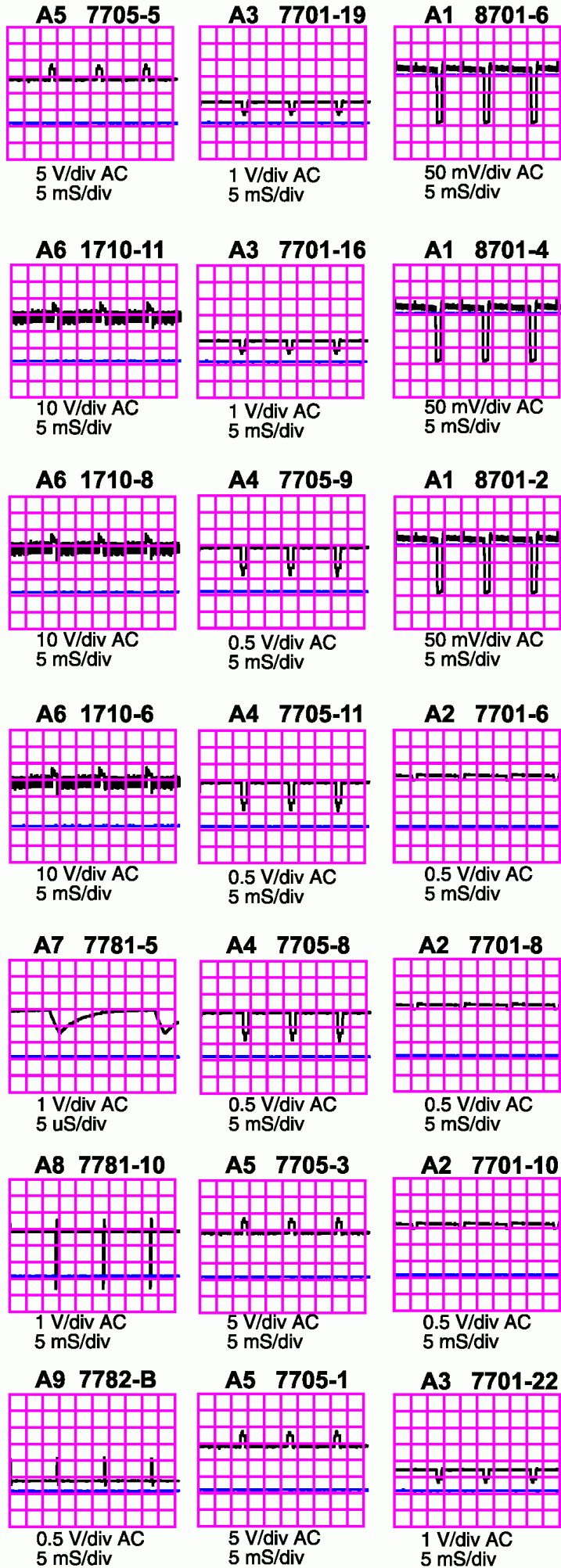
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1008 A2	2016 A2
2001 A1	2017 A2
2002 A1	2018 A1
2003 A2	2019 A1
2004 A2	2020 A1
2005 A1	2021 A1
2007 A2	2031 A1
2011 A1	2032 A1
2013 A2	2033 A1
2023 A2	2034 A1
2025 A2	2035 A1
2027 A2	2036 A1
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5002 A2	3006 A2
5003 A2	3007 A2
7001 A1	3008 A2
	3009 A2
	3010 A1
	3011 A1
	3012 A1
	3013 A1
	3014 A1
	3015 A1
	3016 A2
	3017 A2
	3018 A2
	3019 A2
	3020 A2
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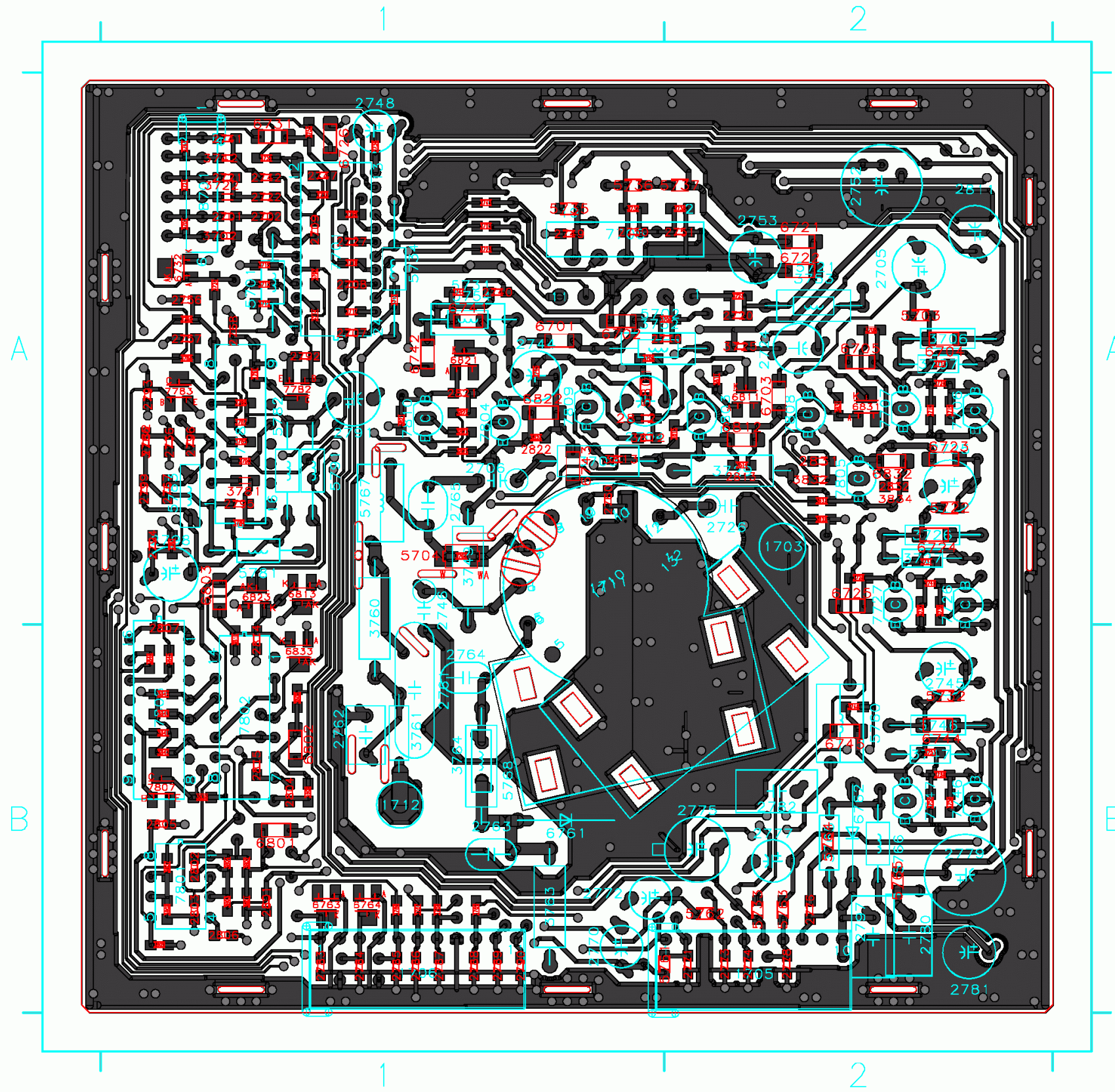


MODEL ITEM	202P4	108P4	201B4
* 6762	BZV85-C51	BZX79-C30	BZX79-C30

NOTES:
 @ STANDS FOR CHIP COMPONENT

Waveform (A)





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2 B1	5731 A1	2710 A2	2822 A1	3767 B1	5732 B2	
1 A1	5734 A1	2720 A2	2831 A2	3768 B1	5733 B2	
6 A2	5760 B2	2721 A1	2832 A2	3769 B1	5735 A1	
5 A1	5766 B2	2722 A1	3701 A1	3781 A1	5736 A1	
4 A2	5767 A1	2727 A1	3702 A1	3782 A1	5737 A2	
5 A2	5768 B1	2736 A1	3703 A1	3783 A1	5761 B1	
6 A2	5781 A1	2740 A1	3704 A2	3784 A1	5762 B2	
4 A1	5782 A1	2741 A1	3705 A1	3785 A1	5763 B2	
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1 B1		2806 B1	3750 B2	3843 B1	7782 A1	
3 B1		2807 B1	3751 B2	3844 B1	7783 A1	

Key Control Schematic Diagram

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E

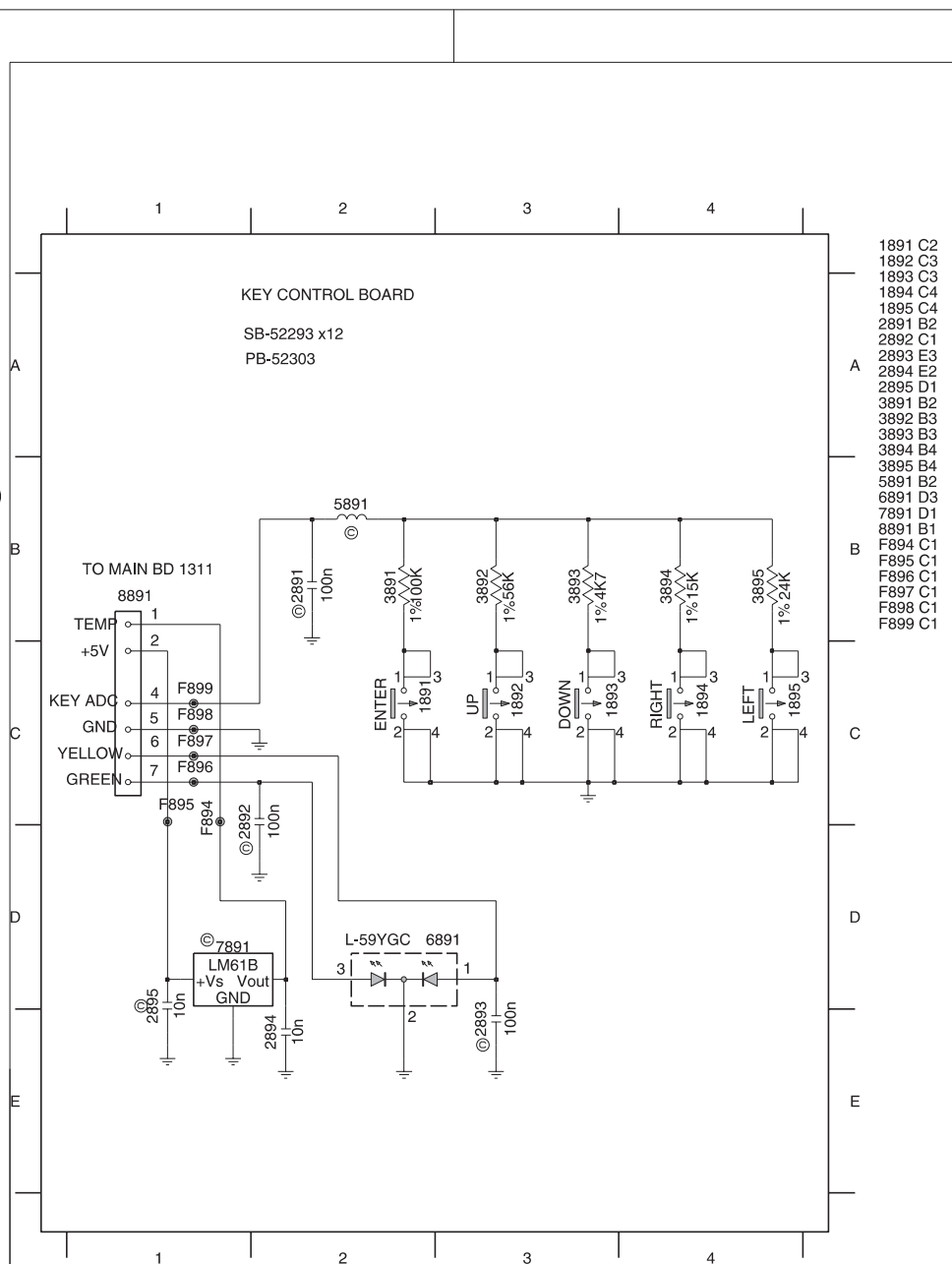
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E



NOTES:

© STAND FOR CHIP COMPONENTS.

CN: TYT12-

CLASS NO.

KEY CONTROL

CM25+ 202P40/00C

3138 178 61981

02-01-23

3

NAME Steve Lin/MC Chang

SUPERS

1

10

130

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A4

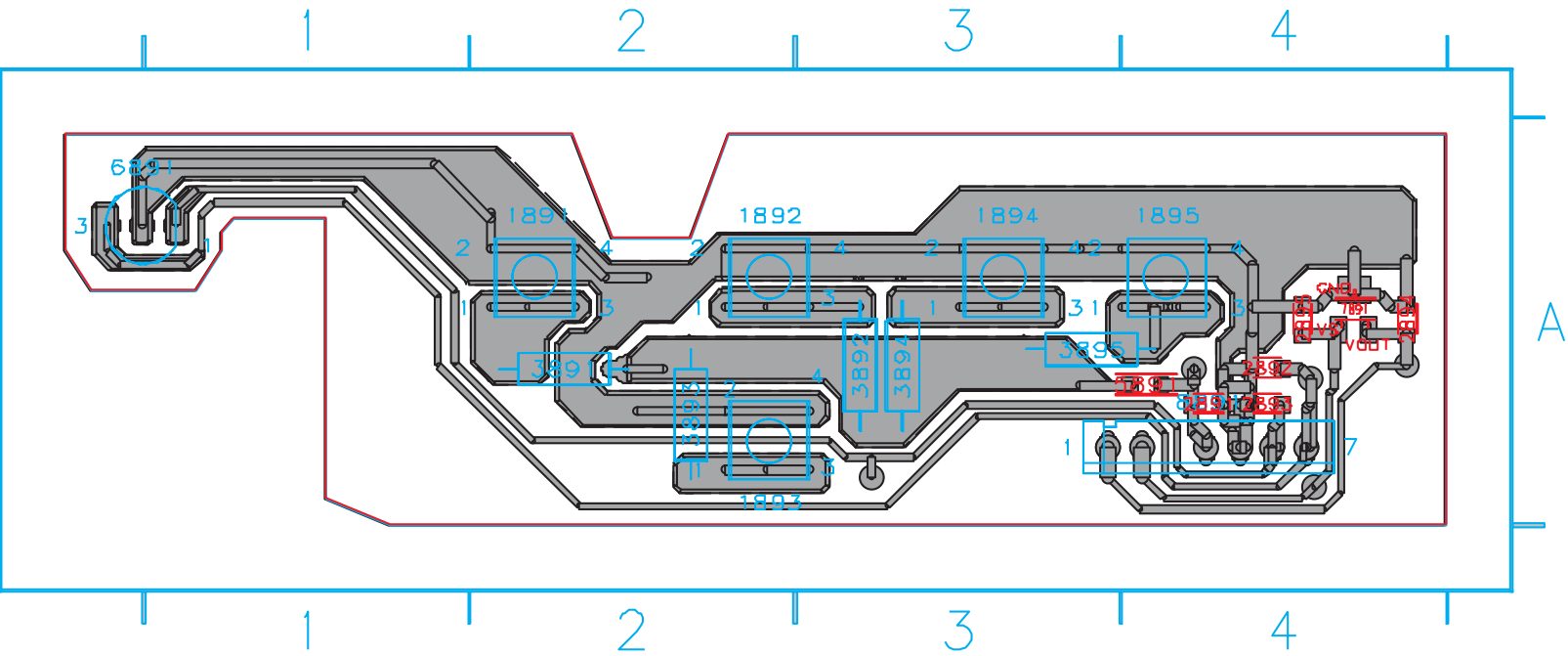
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DATE 02-01-23

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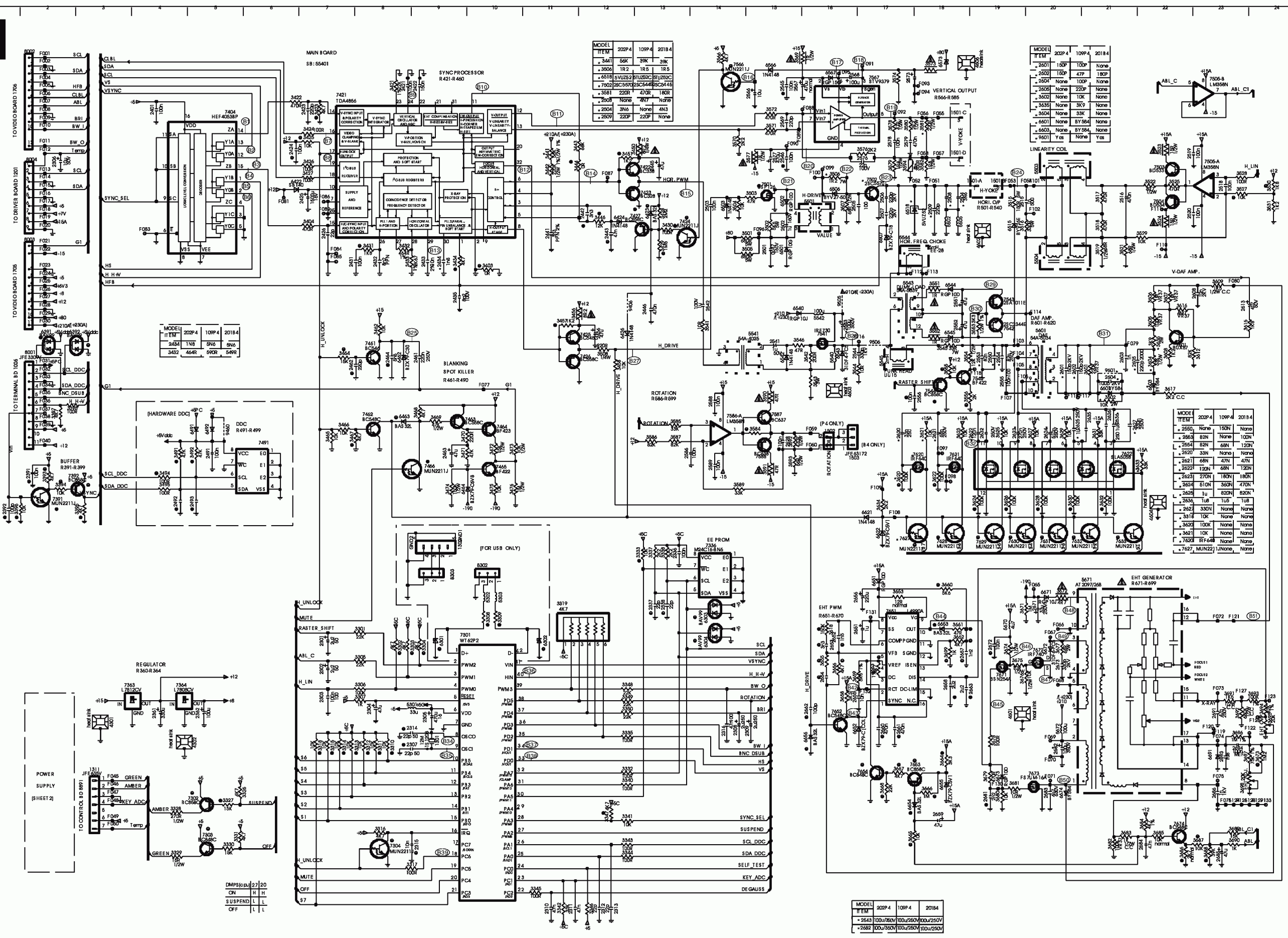
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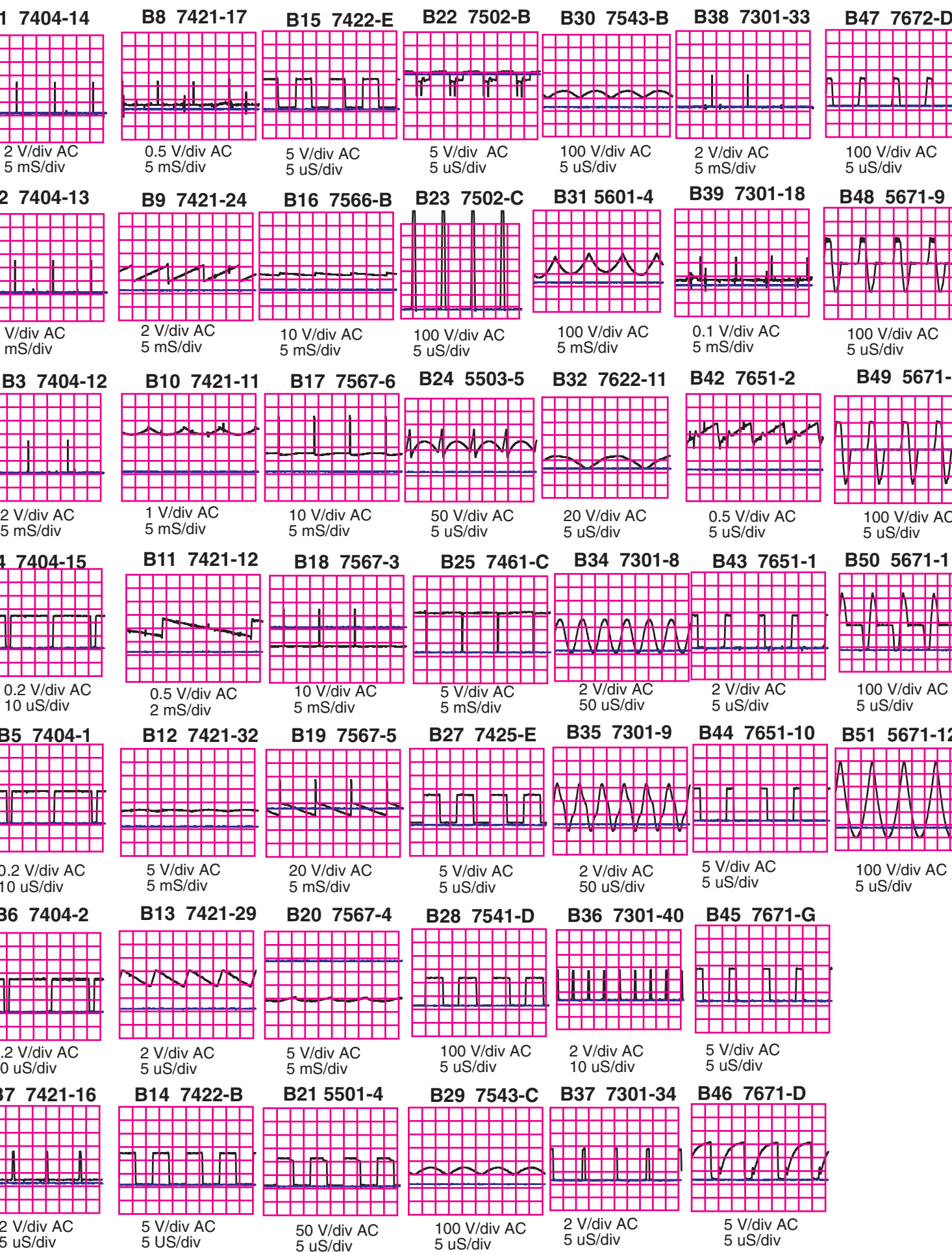
Control Panel P.C.B.(E)



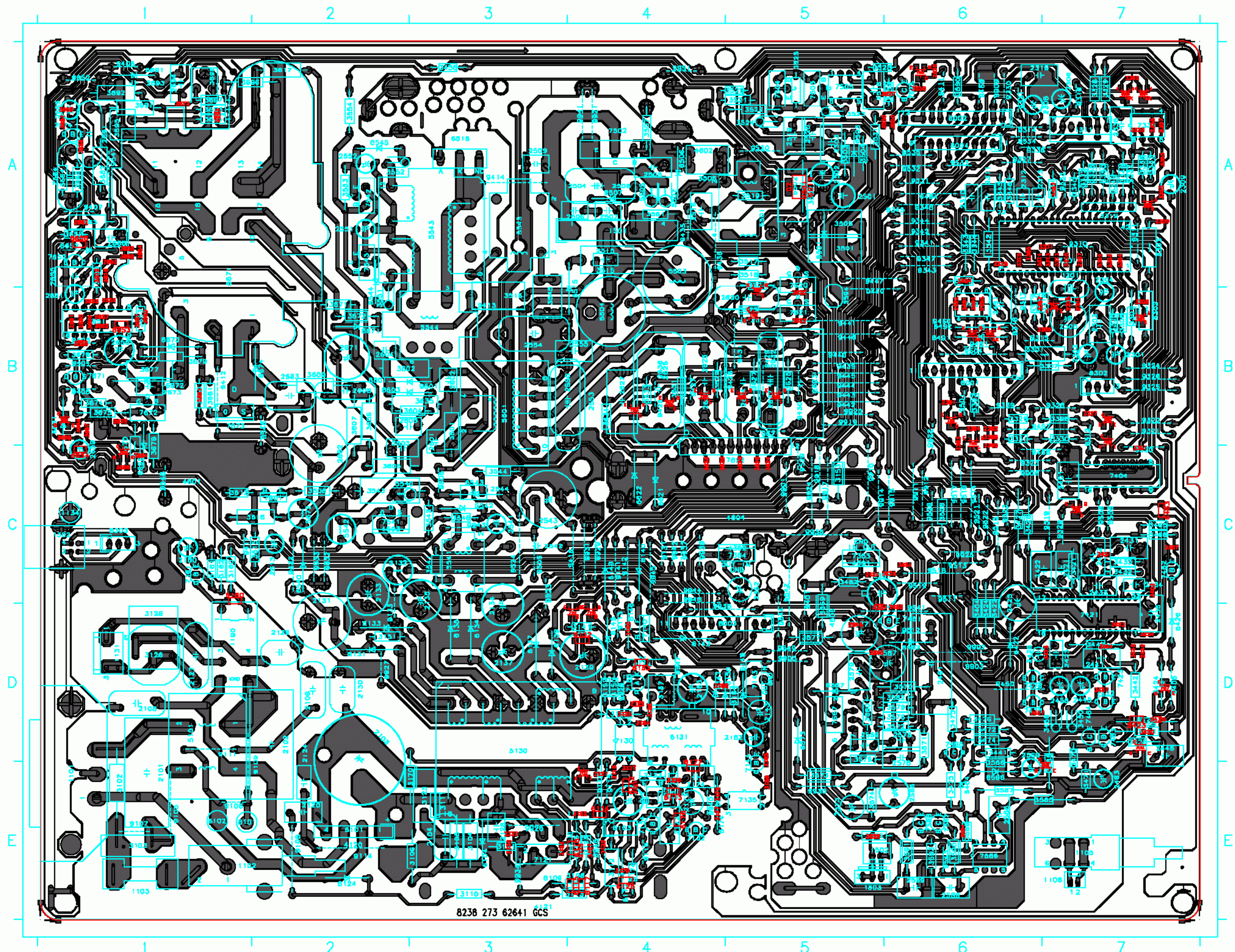
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3894	A3		
3895	A3		
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1301-D C18	3460 F12	6545 F16
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2305 MP	3466 H7	6621 H17
2306 MP	3467 H7	6621 H17
2307 MP	3468 G9	6651 J17
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2309 M14	3470 H9	6653 H18
2309 M15	3470 H9	6653 H18
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2313 P12	3473 H10	6655 N17
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2315 MP	3476 H10	6672 L20
2316 M14	3491 H14	6674 N20
2336 J13	3492 H6	6691 N23
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2558 B16	3593 H15	8001 F7
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2588 G14	3609 E23	9505 F17
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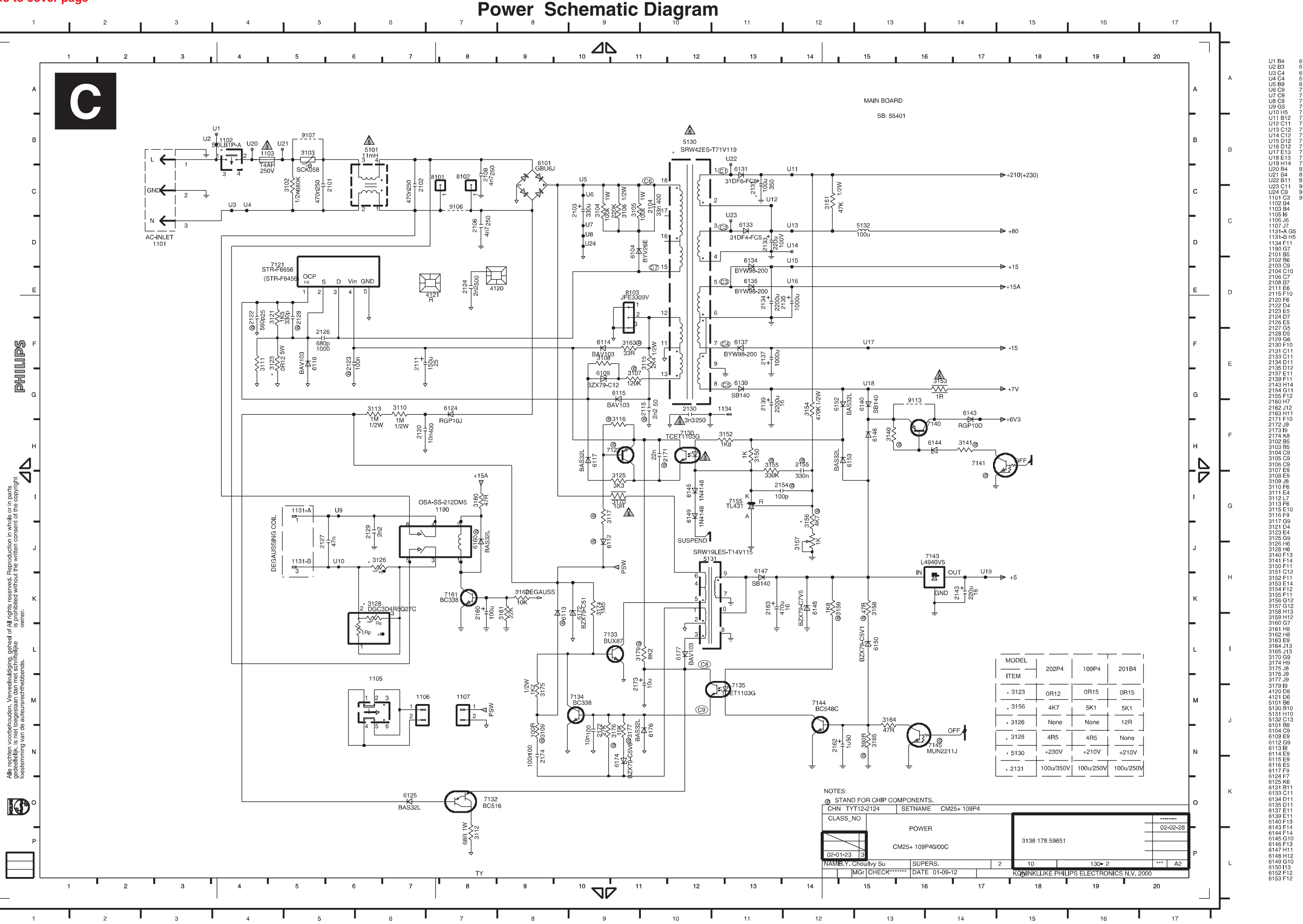




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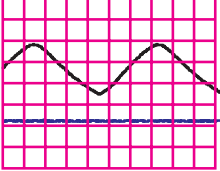


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1134	C1	2401	C7	2579	D5	3126	D1	3428	D7	3552	A2	3671	B2	5545	A3	6621	C4	7620	A5	9328	B7	9460	B6	9915	C6	2307	A7	3310	A7	3655	A1	7466	C7
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1301	A7	2422	C6	2588	E6	3141	D4	3433	C7	3554	A2	3674	B1	5670	C1	6651	B1	7622	C5	9330	A6	9464	A6	9917	C5	2315	B7	3312	A7	3660	B1	7544	A6
1302	C1	2423	D7	2589	E6	3150	D4	3441	D6	3566	E6	3675	B1	5671	A1	6652	A1	7651	B1	9331	A6	9469	A6	9918	C5	2337	A7	3313	A7	3661	B1	7566	E7
1311	A7	2425	C6	2601	B3	3151	D2	3442	D7	3569	D5	3676	C1	5672	C2	6655	C1	7652	A1	9332	A7	9501	B6	9919	B5	2338	A7	3314	A6	3662	B1	7627	B5
1501	A4	2426	D6	2602	B3	3152	D4	3443	D7	3570	D6	3677	B1	6101	E2	6671	B2	7671	B1	9333	A7	9504	B6	9920	B5	2391	B6	3315	A6	3663	B1	7628	B5
1502	E5	2431	C7	2603	B2	3153	C5	3450	D7	3571	D6	3678	B1	6104	E3	6672	B1	7672	B1	9338	A6	9505	C3	9921	A4	2392	B6	3318	A6	3664	C1	7629	B5
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2104	E3	2441	D7	2620	B5	3162	C1	3466	C7	3577	D5	3683	A1	6134	D3	7130	D4	8003	D5	9344	A6	9512	D6	9926	D4	2464	D5	3361	C7	3673	A1	7653	C1
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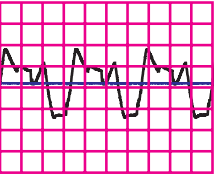


C1 5130-1



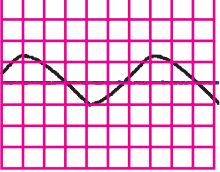
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2 uS/div

C8 7135-4



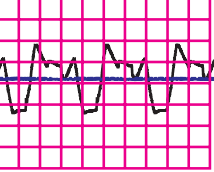
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5 mS/div

C2 5130-3



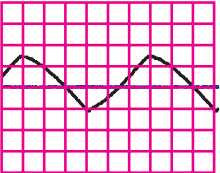
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2 uS/div

C9 7135-3



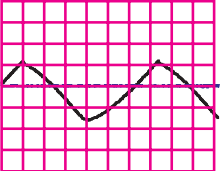
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5 mS/div

C3 5130-5



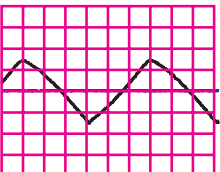
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2 uS/div

C4 5130-7



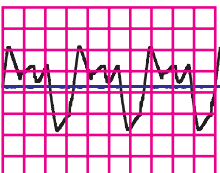
0.5 V/div AC
2 uS/div

C5 5130-9



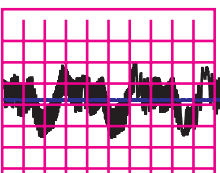
0.2 V/div AC
2 uS/div

C6 5130-18

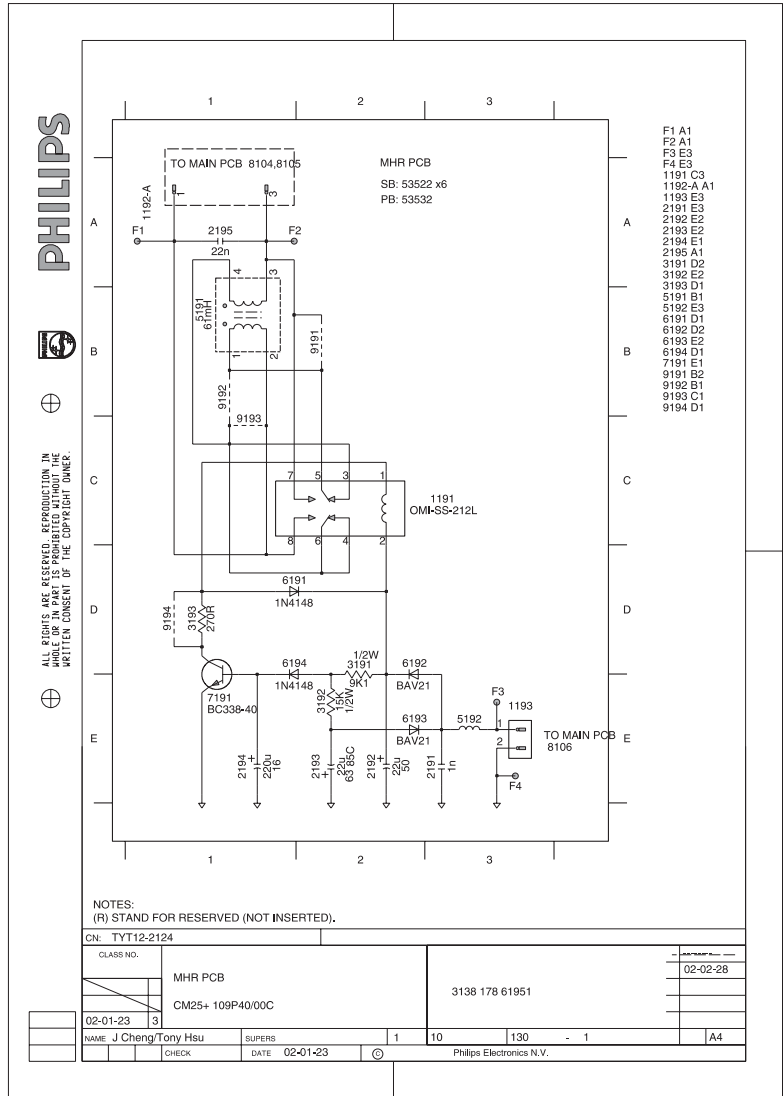


5 V/div AC
5 mS/div

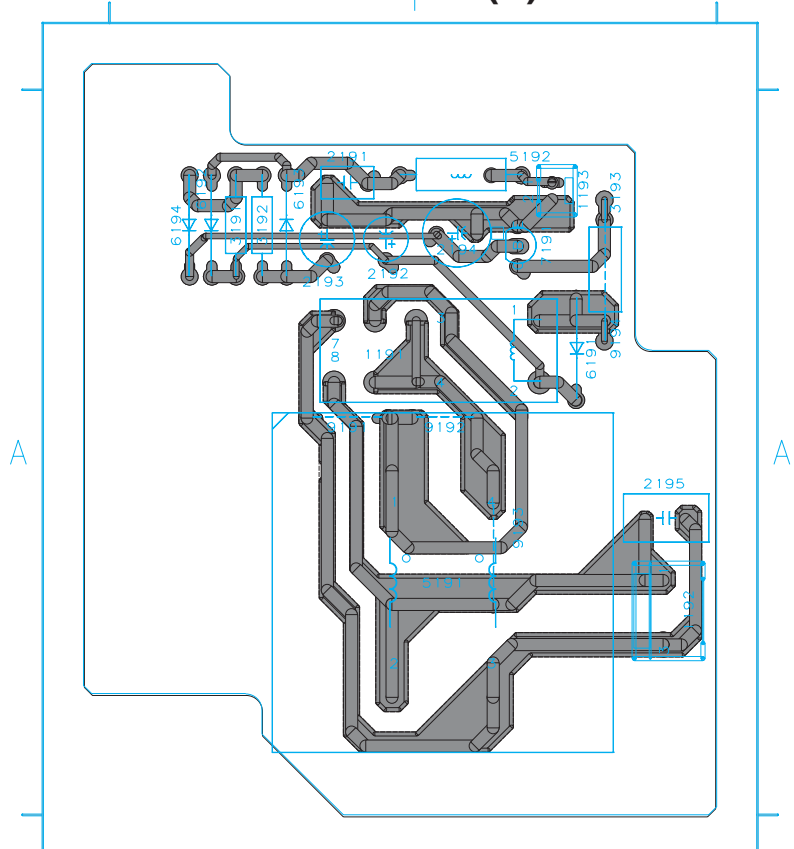
C7 5130-15



10 V/div AC
5 mS/div

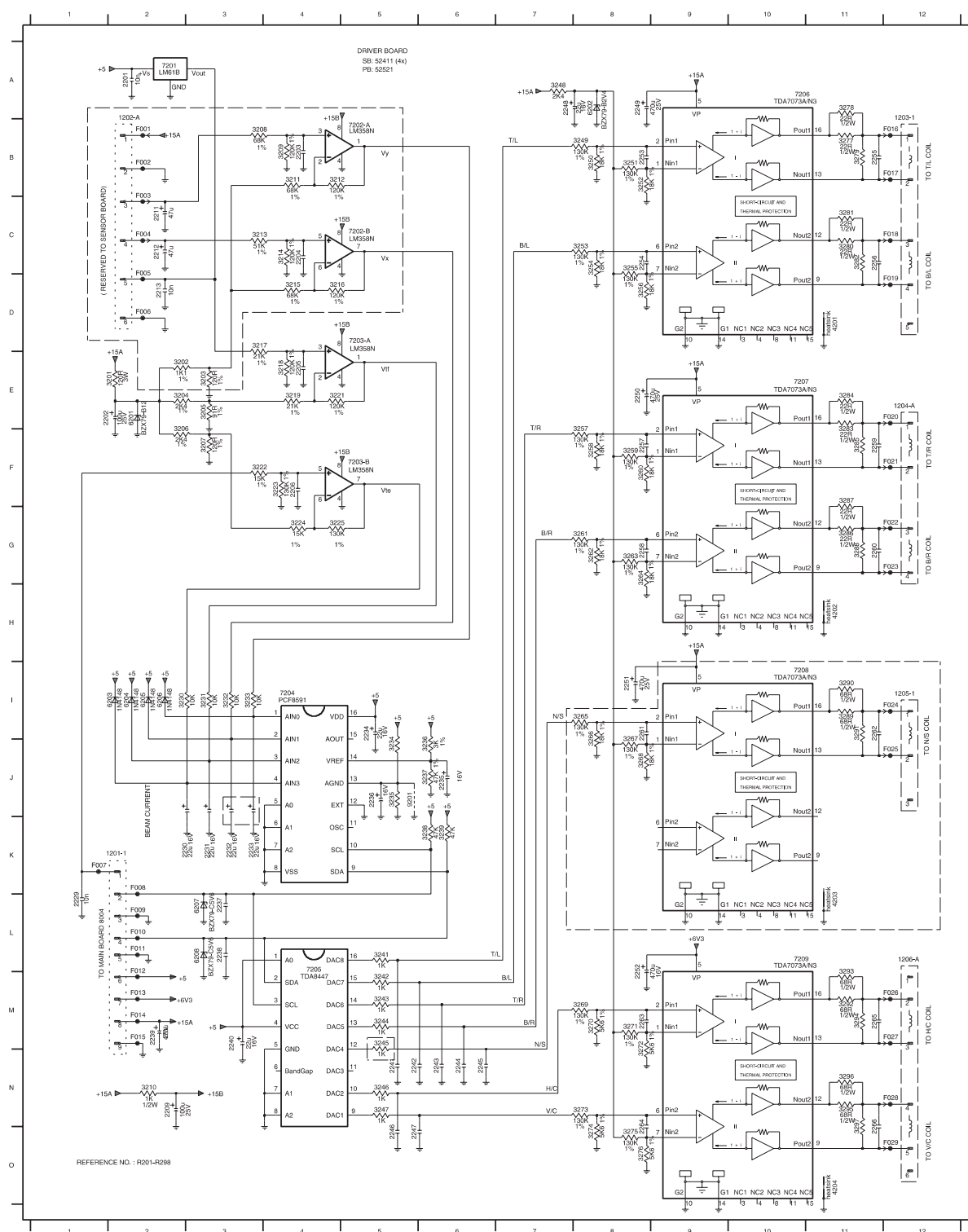


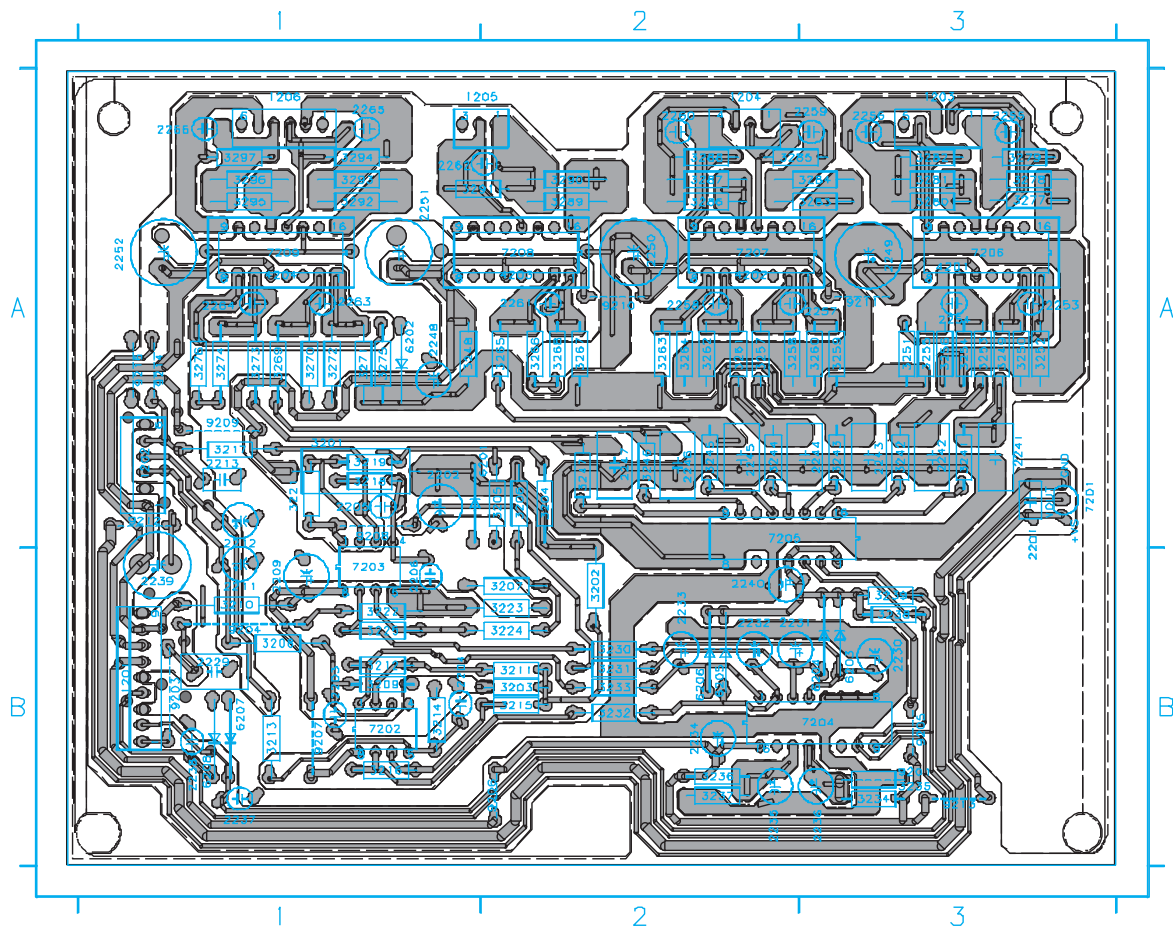
MHR Panel PCB (F)



Drive Schematic Diagram

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[illegible]



1201 B1	3207 B2	3276 A1
1202 A1	3208 B1	3277 A3
1203 A3	3209 B1	3278 A3
1204 A2	3210 B1	3279 A3
1205 A1	3211 B2	3280 A3
1206 A1	3212 B1	3281 A3
2201 A3	3213 B1	3282 A3
2202 A1	3214 B1	3283 A3
2203 B1	3215 B2	3284 A3
2204 B1	3216 B1	3285 A2
2205 A1	3217 A1	3286 A2
2206 B1	3218 A1	3287 A2
2209 B1	3219 A1	3288 A2
2211 B1	3221 A1	3289 A2
2212 A1	3222 B1	3290 A2
2213 A1	3223 B2	3291 A1
2229 B1	3224 B2	3292 A1
2230 B3	3225 B1	3293 A1
2231 B2	3230 B2	3294 A1
2232 B2	3231 B2	3295 A1
2233 B2	3232 B2	3296 A1
2234 B2	3233 B2	3297 A1
2235 B2	3234 B3	4201 A3
2236 B3	3235 B3	4202 A2
2237 B1	3236 B2	4203 A2
2238 B1	3237 B2	4204 A1
2239 B1	3238 B3	6201 A2
2240 B2	3239 B3	6202 A1
2241 A3	3241 A3	6203 B3
2242 A3	3242 A3	6204 B3
2243 A3	3243 A3	6205 B2
2244 A3	3244 A2	6206 B2
2245 A2	3245 A2	6207 B1
2246 A2	3246 A2	6208 B1
2247 A2	3247 A2	7201 A3
2248 A1	3248 A1	7202 B1
2249 A3	3249 A3	7203 B1
2250 A2	3250 A3	7204 B3
2251 A1	3251 A3	7205 A2
2252 A1	3252 A3	7206 A3
2253 A3	3253 A3	7207 A2
2254 A3	3254 A3	7208 A2
2255 A3	3255 A3	7209 A1
2256 A3	3256 A3	9201 B3
2257 A3	3257 A2	9203 B1
2258 A2	3258 A2	9204 B1
2259 A3	3259 A3	9205 B3
2260 A2	3260 A3	9206 B2
2261 A2	3261 A2	9207 B1
2262 A1	3262 A2	9208 A1
2263 A1	3263 A2	9209 A1
2264 A1	3264 A2	9210 A2
2265 A1	3265 A2	9211 A3
2266 A1	3266 A2	9212 A1
3201 A1	3267 A2	9213 B3
3202 B2	3268 A2	9214 A1
3203 B2	3269 A1	9215 A1
3204 A2	3270 A1	
3205 A2	3271 A1	
3206 A2	3272 A1	
	3273 A1	
	3274 A1	

0. Warning

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the unit via a wrist wrap with resistance. Keep components and tools also at the same potential !

1. Servicing of SMDs (Surface Mounted Devices)

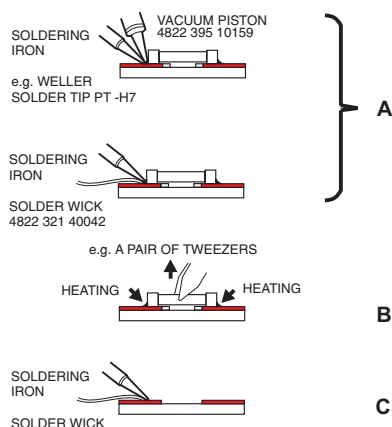
1.1 General cautions on handling and storage

- Oxidation on the terminals of SMDs results in poor soldering. Do not handle SMDs with bare hands.
- Avoid using storage places that are sensitive to oxidation such as places with sulphur or chlorine gas, direct sunlight, high temperatures or a high degree of humidity. The capacitance or resistance value of the SMDs may be affected by this.
- Rough handling of circuit boards containing SMDs may cause damage to the components as well as the circuit boards. Circuit boards containing SMDs should never be bent or flexed. Different circuit board materials expand and contract at different rates when heated or cooled and the components and/or solder connections may be damaged due to the stress. Never rub or scrape chip components as this may cause the value of the component to change. Similarly, do not slide the circuit board across any surface.

1.2 Removal of SMDs

- Heat the solder (for 2-3 seconds) at each terminal of the chip. By means of litz wire and a slight horizontal force, small components can be removed with the soldering iron. They can also be removed with a solder sucker (see Fig. 1A)

Fig. 1 DISMOUNTING



- While holding the SMD with a pair of tweezers, take it off gently using the soldering iron's heat applied to each terminal (see Fig. 1 B).
- Remove the excess solder on the solder lands by means of litz wire or a solder sucker (see Fig. 1C).

1.3 Caution on removal

- When handling the soldering iron, use suitable pressure and be careful.
- When removing the chip, do not use undue force with the pair of tweezers.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- The chip, once removed, must never be reused.

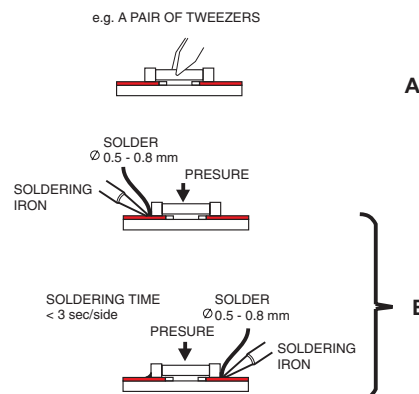
1.4 Attachment of SMDs

- Locate the SMD on the solder lands by means of tweezers and

solder the component on one side. Ensure that the component is Positioned correctly on the solder lands (see Fig.2A).

- Next complete the soldering of the terminals of the component (see Fig. 2B).

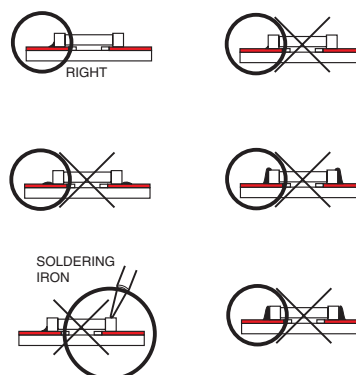
Fig. 2 MOUNTING



2. Caution when attaching SMDs

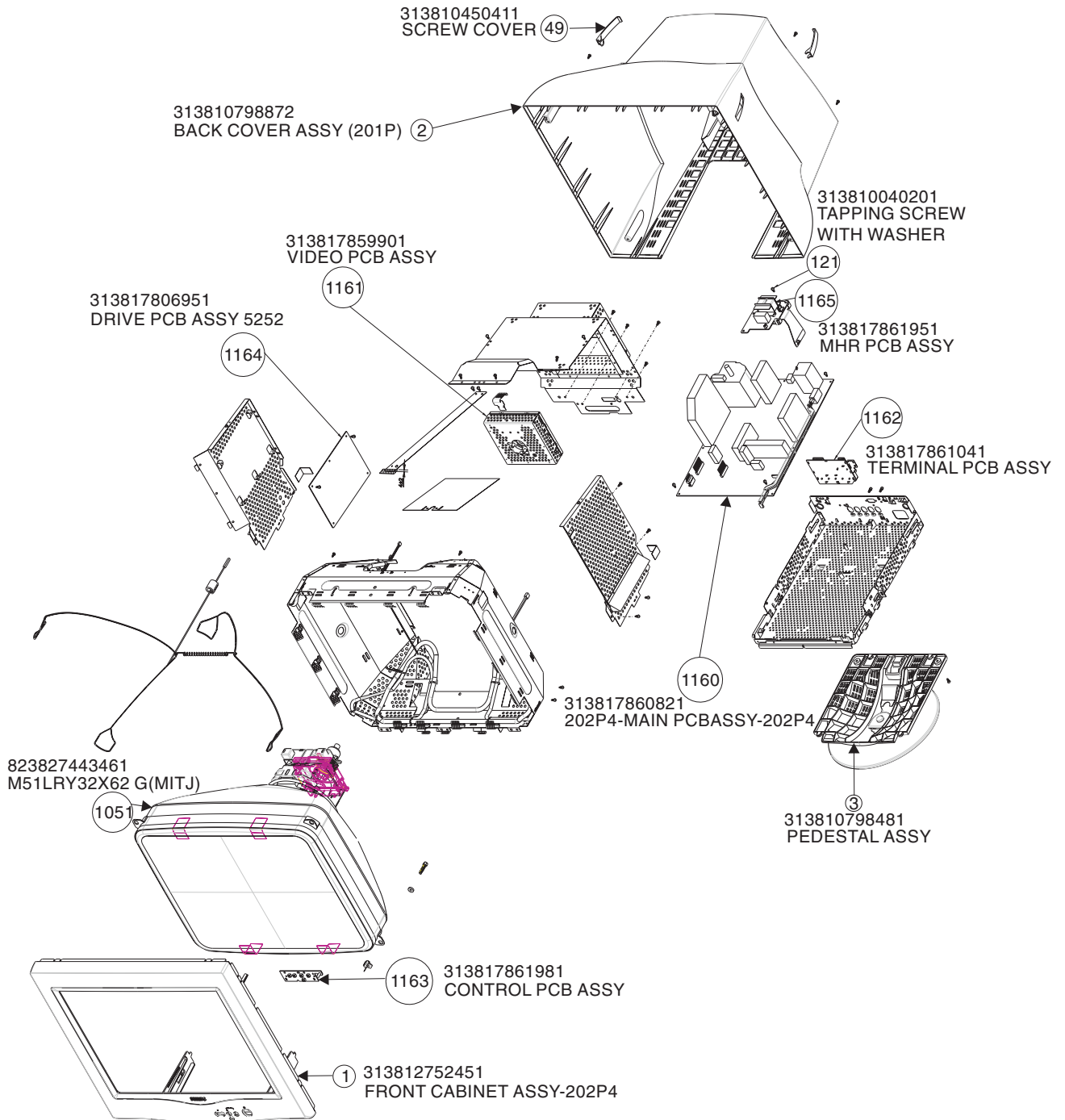
- When soldering the SMD terminals, do not touch them directly with the soldering iron. The soldering should be done as quickly as possible, care must be taken to avoid damage to the terminals of the SMDs themselves.
- Keep the SMD's body in contact with the printed board when soldering.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- Soldering should not be done outside the solder land.
- Soldering flux (of rosin) may be used, but should not be acidic.
- After soldering, let the SMD cool down gradually at room temperature.
- The quantity of solder must be proportional to the size of the solder land. If the quantity is too great, the SMD might crack or the solder lands might be torn loose from the printed board (see Fig. 3).

Fig. 3 Examples



Exploded View

◀◀ Go to cover page



Recommended Parts List

202P4 M25P

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Model : 202P40/00C

ITEM	CODENUMBER	DESCRIPTION
1	313812752451	FRONT CABINET ASSY-202P4
2	313810798872	BACK COVER ASSY (201P)
3	313810798481	PEDESTAL ASSY
4	313812750151	KNOB ASSY
44	313810449471	BASE
46	313810449891	KNOB-OSD
47	313810453791	KNOB-POWER
48	313810450672	LENS-POWER
49	313810450411	SCREW COVER
53	313810449462	SWIVEL
601	313811703881	E-D.F.U. ASSY
450	313810661161	CARTON
451	313810657101	CUSHION - TOP FRONT
452	313810657111	CUSHION - TOP REAR
453	313810657121	CUSHION - BOTTOM
454	313810645301	P.E. BAG
1053 ▲	243807098118	MAINSCORD (220V)-1.5M -CM3000
1054	313818873461	CORD SUB-D 15/1M5/15 SUB-D
1103 ▲	242208600208	FUSE 5X20 HT 4A 250V IEC B
5671 ▲	313816874471	TFM LOT CF1548
7001	932214260682	IC AN5870 (MATJ) L
7121	932214039682	IC STR-F6456(LF1352) (SAKJ) B
7130	932214014667	OPT CP TCET1103(G) (VISH) L
7143	932209200687	IC L4940V5 (ST00) L
7155	932208367676	IC TL431CZ S (ST00) A
7201	932213999682	IC LM61BIZ (NSC0) B
7203	933393510602	IC LM358N (PHSE) L
7204	933768130112	IC PCF8591P (PHSE) L
7205	935229830112	IC TDA8447/N1 (PHSE) L
7206	935262849112	IC TDA7073A/N4 (PHSE) L
7301	823827443451	CPU IC (6148-K420PH-50A)
1265	313817860831	EEPROM ASSY-202P4
7363	933400610682	IC MC7812CT (MOTA) B
7364	933920810682	IC L7808CV (ST00) L
7404	933282660652	IC HEF4053BP (PHSE) L
7421	935267452112	IC TDA4856/V3 (PHSE) L
7502	932217972682	TRA POW 2SC5570 (TOSJ) L
7541	932218090687	TRANS IRF730B
7567	931900234682	IC STV9379 (ST00) L
7651	932212152682	IC L4990A (ST00) L
7672	932214646687	FET POW IRF740A (FSC0) L
7673	932213498687	FET POW FS7UM-16A (MITJ) L
7701	935264061112	IC TDA4887PS/V1 (PHSE) L
7727	319802043010	TRA SIG BF422 (COL) A
7801	932216309682	IC WT62P2 (WESE) L
7806	933706060112	IC PCF8574P (PHSE) L
7891	932214664685	IC SM LM61BIM3 (NSC0) R

Model : 202P40/74

ITEM	CODE NUMBER	DESCRIPTION
450	313810661341	CARTON
1053 ▲	313811876421	MAINSCORD UL 10A 1M5 DET TDS

Remark: Item 450 and item 1053 are the differences between 202P40/00 and 202P40/74.

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Parts List
CTV : 202P40/00C

ITEM	CODENUMBER	DESCRIPTION	ITEM	CODENUMBER	DESCRIPTION
1	313812752451	FRONT CABINET ASSY-202P4	1710	242250080064	SOC CRT V 10P F S-DAF B
2	313810798872	BACK COVER ASSY (201P)	1712	313817877651	CON BM V 1P F G2 CONN. PIN
3	313810798481	PEDESTAL ASSY	1796	313816879171	FERRITE CORE C8BRH 3.5X3.2X1
4	313812750151	KNOB ASSY	1797	313816879171	FERRITE CORE C8BRH 3.5X3.2X1
24	313810133751	BOTTOM PLATE	1798	313816879171	FERRITE CORE C8BRH 3.5X3.2X1
44	313810449471	BASE	1799	313816879171	FERRITE CORE C8BRH 3.5X3.2X1
46	313810449891	KNOB-OSD	1800	243803100167	SOC IC V 42P F 1.77 DIL B
47	313810453791	KNOB-POWER	1891	243812800196	SWI TACT H=5 GY 160G SKHHAM B
48	313810450672	LENS-POWER	1892	243812800196	SWI TACT H=5 GY 160G SKHHAM B
49	313810450411	SCREW COVER	1893	243812800196	SWI TACT H=5 GY 160G SKHHAM B
53	313810449462	SWIVEL	1894	243812800196	SWI TACT H=5 GY 160G SKHHAM B
55	313810449831	POWER LEVEL	1895	243812800196	SWI TACT H=5 GY 160G SKHHAM B
56	313810449481	FOOT RUBBER			
1051 ▲	823827443461	M51LRY32X62 G(MITJ)			
Various			1160	202P4-MAIN PCB ASSY-202P4	
			─┬─		
450	313810661161	CARTON	2101	202030790005	CAP MPOL UV 250V S 470N PM20 B
451	313810657101	CUSHION - TOP FRONT	2102	202030790005	CAP MPOL UV 250V S 470N PM20 B
452	313810657111	CUSHION - TOP REAR	2103	202203100088	ELCAP HP 400V S 330U PM20 B
453	313810657121	CUSHION - BOTTOM	2104	222236856333	CAP MPOL 400V S 33N PM5 B
454	313810645301	P.E. BAG	2106	202055490139	CERSAF NSB 250V S 4N7 PM20 B
Accessories			2108	202055490139	CERSAF NSB 250V S 4N7 PM20 B
			2111	202203100083	ELCAP KM 25V S 150U PM20 A
178	313810540295	SETTING UP GUIDE	2115	223858016618	CER2 0805 X7R 50V 2N2 PM10 R
601	313811703881	E-D.F.U. ASSY	2120	203830200167	CAP MPOL 400V S 10N PM10 B
Miscellaneous			2122	223886115561	CER1 0805 NP0 50V 560P PM5 R
			2123	223891015649	CER2 0805 X7R 25V 100N PM10 R
1053 ▲	243807098118	MAINSCORD (220V)-1.5M -CM3000	2124	225261808221	CER2 DC Y5P 500V S 2N2 PM10 A
1054	313818873461	CORD SUB-D 15/1M5/15 SUB-D	2126	225271108616	CERC 1KV 680P Y5R PM10A
1063	313818873441	COIL CORNER TDC200 A	2127	222234741473	CAP POL 347 250V S 47N PM10 B
1064	313818873451	COIL CORNER TDC200	2128	223886115331	CER1 0805 NP0 50V 330P PM5 R
1101	313817876762	AC INLET ASSY	2129	202055490127	CERSAF NSA 250V S 2N2 PM20 B
1102	243812800107	SWI POW 1P 5/80A PIN SFDL B	2130	202055490149	CERSAF NSA 250V S 3N3 PM20 B
1103 ▲	242208600208	FUSE 5X20 HT 4A 250V IEC B	2131	202203100066	ELCAP KM 350V S 100U PM20 B
1131	243802500208	WAFER 2P B	2133	202203100067	ELCAP GL 100V S 220U PM20 B
1190	243813200141	RELAY 2P 12V 5A 0SA-SSY	2134	202203100065	ELCAP RXJ 25V S 2200U PM20 B
1191	241112102038	RELAY 2P 12V 5A OMIS212L B	2135	202203100064	ELCAP RXJ 25V S 1000U PM20 B
1192	313816876341	CON BM V 2P M 7.92 M241833X	2137	202203100064	ELCAP RXJ 25V S 1000U PM20 B
1193	313816872031	2P WAFER M24262 (VERT)	2139	203803500056	ELCAP SX 16V S 2200U PM20 B
1201	243803100068	CON BM V 9P M 2.50 625/635 B	2143	203803135221	ELCAP VT 16V S 220U PM20 A
1203	313816872961	CON BM V 5P M 2.5 A2501WV2	2154	223886115101	CER1 0805 NP0 50V 100P PM5 R
1204	243803100223	CON BM V 4P M 2.50 61144 B	2155	222291019856	CER2 0805 Y5V 25V 330N P8020 R
1206	313816873081	CON BM V 5P M 2.5 A2501WV2	2160	203803452101	ELCAP VX 10V S 100U PM20 A
1250	313817860841	HOR. TRANS ASSY 6518/7502	2162	203801750221	ELCAP RE 50V S 1U PM20 R
1251	313817806981	VERT IC ASSY(7567-STV9379)	2163	203803511222	ELCAP REA 16V S 470U PM20 A
1252	313817859861	BUCK CON ASSY(7541-IRF730)	2171	223858015645	CER2 0805 X7R 50V 47N PM10 R
1253	313817861911	EHT ASSY (7672/7673)	2172	222236585103	CAP MPOL 100V S 10N PM10 A
1254	313817807021	12V REG ASSY(7363-L7812)	2173	203803513501	ELCAP RGA 50V S 10U PM20 A
1255	313817807031	S-CAP MOSFET ASSY(7622-SLA5058	2174	222236525104	CAP MPOL 100V S 100N PM10 A
1256	313817861941	POW O/P ASSY(7121)	2301	203801750222	ELCAP RE 50V S 2U2 PM20 R
1257	313817807221	DIODE ASSY(6672-31DF6/8E)	2302	203801750222	ELCAP RE 50V S 2U2 PM20 R
1263	313817807081	8V REG ASSY(7364-L7808)	2303	222236526104	CAP MPOL 100V S 100N PM5 A
1264	313817807091	DRIDGE ASSY(6101-GBU6J)	2304	203801750218	ELCAP RE 16V S 47U PM20 R
1265	313817860831	EEPROM ASSY-202P4	2305	203803511222	ELCAP REA 16V S 470U PM20 A
1271	313817806391	VIDEO IC ASSY LM2402(7705)	2306	203801750224	ELCAP MM 50V S 10U PM20 R
1273	313817853351	CERC CAP+CORE ASSY-2763	2307	223886115229	CER1 0805 NP0 50V 22P PM5 R
1274	313817853361	CERC CAP+CORE ASSY-2765	2308	203801750222	ELCAP RE 50V S 2U2 PM20 R
1275	313817861901	CERC CAP+CORE ASSY(2764)	2309	203801750222	ELCAP RE 50V S 2U2 PM20 R
1286	313818873311	CON BNC V 5P F 17.78	2310	222236525473	CAP MPOL 100V S 47N PM10 A
1293	243803100167	SOC IC V 42P F 1.77 DIL B	2311	222236525473	CAP MPOL 100V S 47N PM10 A
1301	243854300064	OSC XTL 12MHZ 32P HC49/S B	2312	225250508205	CER1 DC NP0 50V S 22P PM5 A
1311	243803100066	CON BM V 7P M 2.50 625/635 B	2313	225250508205	CER1 DC NP0 50V S 22P PM5 A
1501	313810020993	WAFER 4P 2.35 DIA	2314	223886115229	CER1 0805 NP0 50V 22P PM5 R
1502	243803100224	CON BM V 2P M 2.50 61142 B	2315	223858015636	CER2 0805 X7R 50V 10N PM10 R
1703	243803201009	CONNECTOR 1P 1.54 DIA B	2316	222236525473	CAP MPOL 100V S 47N PM10 A
1705	243803100056	CON BM H 10P M 2.50 625/626 B	2336	222236525104	CAP MPOL 100V S 100N PM10 A
1706	243803100057	CON BM H 11P M 2.50 625/626 B	2337	223886115229	CER1 0805 NP0 50V 22P PM5 R
			2338	223886115229	CER1 0805 NP0 50V 22P PM5 R

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ITEM	CODENUMBER	DESCRIPTION	ITEM	CODENUMBER	DESCRIPTION
2361	203803513204	ELCAP RGA 16V S 330U PM20 A	2624	203830100332	CAP MPP MPS 250V S 510N PM5 B
2362	203803513201	ELCAP RGA 16V S 100U PM20 A	2625	203830100415	CAP MPP MPS 250V S 1U PM5 B
2391	223891015649	CER2 0805 X7R 25V 100N PM10 R	2627	203830100229	CAP MPP MPS 250V S 330N PM5 B
2392	223886115101	CER1 0805 NP0 50V 100P PM5 R	2628	223891015649	CER2 0805 X7R 25V 100N PM10 R
2401	222236525104	CAP MPOL 100V S 100N PM10 A	2636	203830100402	CAP MPP MPS 250V S 1U8 PM5 B
2421	222236525104	CAP MPOL 100V S 100N PM10 A	2651	203801750221	ELCAP RE 50V S 1U PM20 R
2422	222236525154	CAP MPOL 100V S 150N PM10 A	2652	223858016616	CER2 0805 X7R 50V 1N5 PM10 R
2423	225250508215	CER1 DC NP0 50V S 220P PM5 A	2653	223858016621	CER2 0805 X7R 50V 3N3 PM10 R
2424	223891015649	CER2 0805 X7R 25V 100N PM10 R	2655	203830150151	CAP PP PPN 100V S 10N PM2 A
2425	202203100097	ELCAP KM 16V S 1500U PM20 B	2656	203803513309	ELCAP RGA 25V S 220U PM20 A
2426	225250508205	CER1 DC NP0 50V S 22P PM5 A	2657	223858016615	CER2 0805 X7R 50V 1N2 PM10 R
2431	222236526104	CAP MPOL 100V S 100N PM5 A	2658	222278019867	CER2 0805 Y5V 16V 2U2 P8020 R
2432	203830150186	CAP PP PPN 100V S 8N2 PM5 A	2659	203801750285	ELCAP REA 25V S 47U PM20 A
2433	203830250218	CAP MPOL 100V S 10N PM2 A	2660	223878019858	CER2 0805 Y5V 16V 470N P8020 R
2434	203830150147	CAP PP PPN 100V S 1N8 PM5 A	2661	223878019858	CER2 0805 Y5V 16V 470N P8020 R
2435	203830150186	CAP PP PPN 100V S 8N2 PM5 A	2662	223886115101	CER1 0805 NP0 50V 100P PM5 R
2441	203830150191	CAP PP PPN 100V S 3N3 PM2 A	2663	222278019867	CER2 0805 Y5V 16V 2U2 P8020 R
2442	223858016621	CER2 0805 X7R 50V 3N3 PM10 R	2671	203803513901	ELCAP RGA 250V S 33U PM20 B
2443	223891015645	CER2 0805 X7R 25V 47N PM10 R	2672	223891015649	CER2 0805 X7R 25V 100N PM10 R
2445	203801750218	ELCAP RE 16V S 47U PM20 R	2673	202055890562	CERHDT RR 2KV S 330P PM10 A
2446	222236525474	CAP MPOL 100V S 470N PM10 A	2681	223858016618	CER2 0805 X7R 50V 2N2 PM10 R
2456	203801750218	ELCAP RE 16V S 47U PM20 R	2682	202203100087	ELCAP KL 350V S 100U PM20 B
2461	203830100104	CAP PP PPN 250V S 220N PM5 B	2683	203830100174	CAP PP PPN 630V S 4N7 PM5 B
2462	223886115221	CER1 0805 NP0 50V 220P PM5 R	2684	222234741473	CAP POL 347 250V S 47N PM10 B
2463	203801750218	ELCAP RE 16V S 47U PM20 R	2685	203801750218	ELCAP RE 16V S 47U PM20 R
2464	223858016624	CER2 0805 X7R 50V 5N6 PM10 R	2686	202055890557	CERHDT RR 1KV S 1N PM10 A
2491	222236525104	CAP MPOL 100V S 100N PM10 A	2691	222234741473	CAP POL 347 250V S 47N PM10 B
2501	203803522802	ELCAP BP NK 160V S 0U47 PM20 A	2693	203830200226	CAP MPOL 100V S 1U8 PM5 B
2502	203803522801	ELCAP BP NK 160V S 1U PM20 A	2694	222236526104	CAP MPOL 100V S 100N PM5 A
2503	222236525104	CAP MPOL 100V S 100N PM10 A			
2504	222237590558	CAP PP-MPOL 2KV5 S 3N6 PM5 B			
2506	202055890561	CERHDT RR 2KV S 220P PM10 A			
2507	202055890561	CERHDT RR 2KV S 220P PM10 A	3102	232224213684	RST MGL VR37 A 680K PM5 A
2515	202055890557	CERHDT RR 1KV S 1N PM10 A	3103	213866000024	NTC DC SCK-058 S 5R PM15 B
2516	222236525474	CAP MPOL 100V S 470N PM10 A	3104	213810500337	RST MOX 1W RSS A 100K PM5 A
2518	222236525104	CAP MPOL 100V S 100N PM10 A	3105	213810500337	RST MOX 1W RSS A 100K PM5 A
2519	222236525104	CAP MPOL 100V S 100N PM10 A	3106	232224213224	RST MGL VR37 A 220K PM5 A
2520	222236525104	CAP MPOL 100V S 100N PM10 A	3107	232273061124	RST SM 0805 RC11 120K PM5 R
2541	202203600002	ELCAP BP NK 50V S 1U PM20 A	3109	319802151010	RST SM 0805 100R PM5 COL R
2542	203830100117	CAP MPP 100V S 1U PM5 B	3110	232224181005	RST MGL VR25 A 1M PM1 A
2543	202203100066	ELCAP KM 350V S 100U PM20 B	3112	212010590767	RST MOX 1W RSS A 68R PM5 A
2544	202055890562	CERHDT RR 2KV S 330P PM10 A	3113	232224181005	RST MGL VR25 A 1M PM1 A
2545	223891015649	CER2 0805 X7R 25V 100N PM10 R	3115	231291512402	RST MFLM MBB0207 A 2K4 PM1 A
2546	223891015649	CER2 0805 X7R 25V 100N PM10 R	3121	213810113152	RST CRB CFR-12 A 1K5 PM5 A
2551	203803513301	ELCAP RGA 25V S 47U PM20 A	3122	319802190020	RST SM 0805 JUMP. 0R05 COL R
2552	203803513301	ELCAP RGA 25V S 47U PM20 A	3123	212212400001	RST MPLT 5W MPR S 0R12 PM10 B
2553	203830100201	CAP PP PPN 400V S 82N PM5 B	3124	319802190020	RST SM 0805 JUMP. 0R05 COL R
2554	203830100201	CAP PP PPN 400V S 82N PM5 B	3125	213810113102	RST CRB CFR-12 A 1K PM5 A
2555	222236525104	CAP MPOL 100V S 100N PM10 A	3128	213866000037	PTC DBL-MONO 270V 4R5 P3020 B
2556	223891015649	CER2 0805 X7R 25V 100N PM10 R	3150	213810113102	RST CRB CFR-12 A 1K PM5 A
2566	203803513501	ELCAP RGA 50V S 10U PM20 A	3151	231291514703	RST MFLM MBB0207 A 47K PM1 A
2567	203803513305	ELCAP RGA 25V S 470U PM20 B	3152	213810113102	RST CRB CFR-12 A 1K PM5 A
2568	203803511402	ELCAP REA 35V S 100U PM20 A	3153	232220533108	RST FUSE NFR25 A 1R PM5 A
2569	225250508215	CER1 DC NP0 50V S 220P PM5 A	3154	213810500433	RST MGL RMU A 470K PM1 A
2576	222236585223	CAP MPOL 100V S 22N PM10 A	3155	319802153340	RST SM 0805 330K PM5 COL R
2577	203803513305	ELCAP RGA 25V S 470U PM20 B	3156	232273464702	RST SM 0805 RC12H 4K7 PM1 R
2578	222236525104	CAP MPOL 100V S 100N PM10 A	3157	213836500081	RTRM CER LIN 1K H VG067TL1 B
2579	222236525474	CAP MPOL 100V S 470N PM10 A	3158	319802154790	RST SM 0805 47R PM5 COL R
2586	222236526104	CAP MPOL 100V S 100N PM5 A	3159	319802151820	RST SM 0805 1K8 PM5 COL R
2588	222236525104	CAP MPOL 100V S 100N PM10 A	3160	231291514709	RST MFLM MBB0207 A 47R PM1 A
2589	222236525104	CAP MPOL 100V S 100N PM10 A	3161	213810113223	RST CRB CFR-12 A 22K PM5 A
2601	225271214116	CERHDT F-Y5R 2KV S 150P PM10 A	3162	213810113103	RST CRB CFR-12 A 10K PM5 A
2602	225271214116	CERHDT F-Y5R 2KV S 150P PM10 A	3163	319802153390	RST SM 0805 33R PM5 COL R
2603	202055890557	CERHDT RR 1KV S 1N PM10 A	3164	213810113101	RST CRB CFR-12 A 100R PM5 A
2608	223555900099	CER2 DC 2KV S 10N PM20 B	3165	319802152710	RST SM 0805 270R PM5 COL R
2613	203803513504	ELCAP RGA 50V S 4U7 PM20 A	3170	232220733109	RST FUSE NFR25H A 10R PM5 A
2620	203830100309	CAP PP PPN 250V S 33N PM5 B	3174	213810113155	RST CRB CFR-12 A 1M5 PM5 A
2621	203830100188	CAP PP PPN 250V S 68N PM5 B	3175	231291511202	RST MFLM MBB0207 A 1K2 PM1 A
2622	203830100195	CAP PP PPN 250V S 120N PM5 B	3176	232273061243	RST SM 0805 RC11 24K PM5 R
2623	203830100166	CAP PP PPN 250V S 270N PM5 B	3177	319802151530	RST SM 0805 15K PM5 COL R

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ITEM	CODENUMBER	DESCRIPTION	ITEM	CODENUMBER	DESCRIPTION
3179	319802158220	RST SM 0805 8K2 PM5 COL R	3444	319802190020	RST SM 0805 JUMP. 0R05 COL R
3301	213810113223	RST CRB CFR-12 A 22K PM5 A	3446	319802151230	RST SM 0805 12K PM5 COL R
3302	319802154720	RST SM 0805 4K7 PM5 COL R	3450	230620403828	RST FUSE NFR25 S 8R2 PM5 A
3303	319802154720	RST SM 0805 4K7 PM5 COL R	3451	319802151220	RST SM 0805 1K2 PM5 COL R
3304	319802154720	RST SM 0805 4K7 PM5 COL R	3456	230620403828	RST FUSE NFR25 S 8R2 PM5 A
3305	213810113223	RST CRB CFR-12 A 22K PM5 A	3457	319802151220	RST SM 0805 1K2 PM5 COL R
3306	213810113104	RST CRB CFR-12 A 100K PM5 A	3458	213810113103	RST CRB CFR-12 A 10K PM5 A
3307	213810113102	RST CRB CFR-12 A 1K PM5 A	3462	213810113103	RST CRB CFR-12 A 10K PM5 A
3310	319802151030	RST SM 0805 10K PM5 COL R	3464	319802151530	RST SM 0805 15K PM5 COL R
3311	319802151030	RST SM 0805 10K PM5 COL R	3465	213810113103	RST CRB CFR-12 A 10K PM5 A
3312	319802151030	RST SM 0805 10K PM5 COL R	3466	213810113103	RST CRB CFR-12 A 10K PM5 A
3313	319802151030	RST SM 0805 10K PM5 COL R	3467	319802154720	RST SM 0805 4K7 PM5 COL R
3314	319802151030	RST SM 0805 10K PM5 COL R	3468	213810113472	RST CRB CFR-12 A 4K7 PM5 A
3315	319802151030	RST SM 0805 10K PM5 COL R	3469	213811273473	RST CRB CFR-25 A 47K PM5 A
3316	213810113472	RST CRB CFR-12 A 4K7 PM5 A	3470	213810113221	RST CRB CFR-12 A 220R PM5 A
3317	213810113101	RST CRB CFR-12 A 100R PM5 A	3471	213810113473	RST CRB CFR-12 A 47K PM5 A
3318	319802151030	RST SM 0805 10K PM5 COL R	3472	231291511503	RST MFLM MBB0207 A 15K PM1 A
3319	213811203006	RST NETW RNL 5X 4K7 PM5 B	3473	231291511003	RST MFLM MBB0207 A 10K PM1 A
3326	213810113472	RST CRB CFR-12 A 4K7 PM5 A	3474	231291511504	RST MFLM MBB0207 A 150K PM1 A
3327	319802151530	RST SM 0805 15K PM5 COL R	3475	213811273103	RST CRB CFR-25 A 10K PM5 A
3328	231291512701	RST MFLM MBB0207 A 270R PM1 A	3476	232224181005	RST MGL VR25 A 1M PM1 A
3329	231291511509	RST MFLM MBB0207 A 15R PM1 A	3491	319802154730	RST SM 0805 47K PM5 COL R
3330	213810113103	RST CRB CFR-12 A 10K PM5 A	3492	319802154730	RST SM 0805 47K PM5 COL R
3331	213810113472	RST CRB CFR-12 A 4K7 PM5 A	3494	319802151010	RST SM 0805 100R PM5 COL R
3332	213810113101	RST CRB CFR-12 A 100R PM5 A	3495	213810113101	RST CRB CFR-12 A 100R PM5 A
3333	319802151030	RST SM 0805 10K PM5 COL R	3501	213810500335	RST MOX5W RSM5WL S 680R PM5 B
3335	213810113101	RST CRB CFR-12 A 100R PM5 A	3502	213810500442	RST MOX5W RSM5WL S 5K6 PM5 B
3337	213810113222	RST CRB CFR-12 A 2K2 PM5 A	3503	213810113479	RST CRB CFR-12 A 47R PM5 A
3338	213810113222	RST CRB CFR-12 A 2K2 PM5 A	3504	213810113103	RST CRB CFR-12 A 10K PM5 A
3340	213810113101	RST CRB CFR-12 A 100R PM5 A	3505	213810500335	RST MOX5W RSM5WL S 680R PM5 B
3341	213810113103	RST CRB CFR-12 A 10K PM5 A	3506	213810500405	RST MOX 7W RSH S 1R2 PM5 B
3342	231291513303	RST MFLM MBB0207 A 33K PM1 A	3507	231291516809	RST MFLM MBB0207 A 68R PM1 A
3343	213810113101	RST CRB CFR-12 A 100R PM5 A	3508	213811273221	RST CRB CFR-25 A 220R PM5 A
3344	213810113101	RST CRB CFR-12 A 100R PM5 A	3515	213810500074	RST MOX5W RSM5WL S 150R PM5 B
3345	213810113101	RST CRB CFR-12 A 100R PM5 A	3516	213810500076	RST MOX5W RSM5WL S 330R PM5 B
3347	319802154720	RST SM 0805 4K7 PM5 COL R	3517	213810113471	RST CRB CFR-12 A 470R PM5 A
3348	213810113223	RST CRB CFR-12 A 22K PM5 A	3518	213810113471	RST CRB CFR-12 A 470R PM5 A
3349	213810113223	RST CRB CFR-12 A 22K PM5 A	3519	231291516809	RST MFLM MBB0207 A 68R PM1 A
3350	213810113223	RST CRB CFR-12 A 22K PM5 A	3521	231291516809	RST MFLM MBB0207 A 68R PM1 A
3361	319802190020	RST SM 0805 JUMP. 0R05 COL R	3522	231291514708	RST MFLM MBB0207 A 4R7 PM1 A
3362	319802190020	RST SM 0805 JUMP. 0R05 COL R	3523	230620403159	RST FUSE NFR25 S 15R PM5 A
3363	319802190020	RST SM 0805 JUMP. 0R05 COL R	3524	230620403159	RST FUSE NFR25 S 15R PM5 A
3365	319802190020	RST SM 0805 JUMP. 0R05 COL R	3525	213811273471	RST CRB CFR-25 A 470R PM5 A
3366	319802190020	RST SM 0805 JUMP. 0R05 COL R	3527	319802151030	RST SM 0805 10K PM5 COL R
3367	319802190020	RST SM 0805 JUMP. 0R05 COL R	3528	213810113101	RST CRB CFR-12 A 100R PM5 A
3393	319802154720	RST SM 0805 4K7 PM5 COL R	3529	213810113103	RST CRB CFR-12 A 10K PM5 A
3394	319802151030	RST SM 0805 10K PM5 COL R	3530	319802151820	RST SM 0805 1K8 PM5 COL R
3395	319802154720	RST SM 0805 4K7 PM5 COL R	3531	213811273122	RST CRB CFR-25 A 1K2 PM5 A
3396	319802151030	RST SM 0805 10K PM5 COL R	3541	213810113109	RST CRB CFR-12 A 10R PM5 A
3397	213810113472	RST CRB CFR-12 A 4K7 PM5 A	3542	231291512001	RST MFLM MBB0207 A 200R PM1 A
3398	213810113101	RST CRB CFR-12 A 100R PM5 A	3544	231291511009	RST MFLM MBB0207 A 10R PM1 A
3403	319802190020	RST SM 0805 JUMP. 0R05 COL R	3545	213810500095	RST MOX 7W RSH S 33R PM5 B
3404	213810113471	RST CRB CFR-12 A 470R PM5 A	3546	213810113479	RST CRB CFR-12 A 47R PM5 A
3421	231291512203	RST MFLM MBB0207 A 22K PM1 A	3551	230620403108	RST FUSE NFR25 S 1R PM5 A
3422	213810113471	RST CRB CFR-12 A 470R PM5 A	3552	230620403108	RST FUSE NFR25 S 1R PM5 A
3423	319802154720	RST SM 0805 4K7 PM5 COL R	3553	231291513302	RST MFLM MBB0207 A 3K3 PM1 A
3424	213810113101	RST CRB CFR-12 A 100R PM5 A	3554	231291511203	RST MFLM MBB0207 A 12K PM1 A
3425	319802151030	RST SM 0805 10K PM5 COL R	3555	319802151030	RST SM 0805 10K PM5 COL R
3426	213810113101	RST CRB CFR-12 A 100R PM5 A	3556	232273061202	RST SM 0805 RC11 2K PM5 R
3427	213810113101	RST CRB CFR-12 A 100R PM5 A	3566	213810113472	RST CRB CFR-12 A 4K7 PM5 A
3428	213810113225	RST CRB CFR-12 A 2M2 PM5 A	3569	232220733108	RST FUSE NFR25H A 1R PM5 A
3429	232273061155	RST SM 0805 RC11 1M5 PM5 R	3570	231291512202	RST MFLM MBB0207 A 2K2 PM1 A
3430	319802151010	RST SM 0805 100R PM5 COL R	3571	213811273471	RST CRB CFR-25 A 470R PM5 A
3431	319802151820	RST SM 0805 1K8 PM5 COL R	3572	213811273471	RST CRB CFR-25 A 470R PM5 A
3432	231291514641	RST MFLM MBB0207 A 464R PM1 A	3576	231291512202	RST MFLM MBB0207 A 2K2 PM1 A
3433	231291512672	RST MFLM MBB0207 A 2K67 PM1 A	3577	232220733108	RST FUSE NFR25H A 1R PM5 A
3434	319802154720	RST SM 0805 4K7 PM5 COL R	3578	231291514709	RST MFLM MBB0207 A 47R PM1 A
3441	231291515603	RST MFLM MBB0207 A 56K PM1 A	3579	231291511508	RST MFLM MBB0207 A 1R5 PM1 A
3442	232224182204	RST MGL VR25 A 220K PM1 A	3580	231291512208	RST MFLM MBB0207 A 2R2 PM1 A
3443	213810113683	RST CRB CFR-12 A 68K PM5 A	3581	231291512201	RST MFLM MBB0207 A 220R PM1 A

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ITEM	CODENUMBER	DESCRIPTION
3692	232224213684	RST MGL VR37 A 680K PM5 A
3693	231291511004	RST MFLM MBB0207 A 100K PM1 A
3694	231291518203	RST MFLM MBB0207 A 82K PM1 A
3695	213836500102	RTRM CER LIN 20K H VG067TL1 B
3696	231291511005	RST MFLM MBB0207 A 1M PM1 A
3697	231291517503	RST MFLM MBB0207 A 75K PM1 A
3698	213836500102	RTRM CER LIN 20K H VG067TL1 B
3699	319802151020	RST SM 0805 1K PM5 COL R
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5101	313816873611	LINE FILTER (HJC-K8259)
5130	313818873531	TFM SMTLAYER SRW42ES-T71V119
5131	313818873551	TFM SMT LAYER SRW19LES-T14V115
5132	242253600036	IND FXD TSL0808 S 100U PM10 A
5301	242253597416	IND FXD SP0406 A 33U PM10 B
5501	313817871331	DRIVER TRANSF.
5502	313816874061	BEAD BF30UTA-3.5X5X1B
5503	313816873551	LINEARITY COIL(54A-9050H)
5504	313816873541	LINEARITY COIL(54A-9049H)
5505	313816874061	BEAD BF30UTA-3.5X5X1B
5540	313816874061	BEAD BF30UTA-3.5X5X1B
5541	313811878961	G DRIVER TRANSFORMER
5542	242253600036	IND FXD TSL0808 S 100U PM10 A
5543	313812874431	HOR.CENTERING TRAN.
5544	313811878951	H SHIFT CHOKE COIL
5545	313812874421	PUNK HEAD CHOKE
5601	313812874411	DAF TRANSFORMER
5670	242253597069	IND FXD SP0305 A 4U7 PM10 B
5671	313816874471	TFM LOT CF1548
5672	242253600036	IND FXD TSL0808 S 100U PM10 A
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6101	931900263671	BRIDGE GBU6J (GI00) Y
6104	933703700133	DIO REC BYV26E A (PHSE) A
6109	319801021290	DIO REG BZX79-C12 A COL A
6114	933952580685	DIO SIG SM BAV103 (TEG0) R
6115	933952580685	DIO SIG SM BAV103 (TEG0) R
6116	933952580685	DIO SIG SM BAV103 (TEG0) R
6117	933913910115	DIO SIG SM BAS32L (PHSE) R
6124	933497950683	DIO REC RGP10J A (GI00) R
6125	933913910115	DIO SIG SM BAS32L (PHSE) R
6131	932212636682	DIO REC 31DF6-FC5 (NIEC) B
6133	932212636682	DIO REC 31DF6-FC5 (NIEC) B
6134	932208187683	DIO REC BYW98-200 (ST00) R
6135	932208187683	DIO REC BYW98-200 (ST00) R
6137	932208187683	DIO REC BYW98-200 (ST00) R
6139	932210346673	DIO REC SBYV27-200 A (GI00) A
6143	933751660683	DIO REC RGP10D A (GI00) R
6145	319801010010	DIO SIG 1N4148 (COL) A
6147	933957760683	DIO REC SB140 A (GI00) R
6148	933117760133	DIO REG BZX79-C7V5 A (PHSE) A
6149	319801010010	DIO SIG 1N4148 (COL) A
6150	319801025180	DIO REG BZX79-C5V1 A COL A
6152	933913910115	DIO SIG SM BAS32L (PHSE) R
6153	933913910115	DIO SIG SM BAS32L (PHSE) R
6160	933913910115	DIO SIG SM BAS32L (PHSE) R
6172	933117960133	DIODE BZX79-C51
6174	319801025680	DIO REG BZX79-C5V6 A COL A
6176	933913910115	DIO SIG SM BAS32L (PHSE) R
6177	933952580685	DIO SIG SM BAV103 (TEG0) R
6303	319801010620	DIO SIG SM BAV99 (COL) R
6304	319801010620	DIO SIG SM BAV99 (COL) R
6391	319801010620	DIO SIG SM BAV99 (COL) R
6392	319801010620	DIO SIG SM BAV99 (COL) R
6422	933957760683	DIO REC SB140 A (GI00) R
6423	933913910115	DIO SIG SM BAS32L (PHSE) R
6424	319801010010	DIO SIG 1N4148 (COL) A
6426	319801010010	DIO SIG 1N4148 (COL) A

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6462	933117900133	DIO REG BZX79-C30 A (PHSE) A
6463	933913910115	DIO SIG SM BAS32L (PHSE) R
6464	319801026880	DIO REG BZX79-C6V8 A COL A
6501	933493960683	DIO REC RGP10G A (GI00) R
6502	933751660683	DIO REC RGP10D A (GI00) R
6503	319801010010	DIO SIG 1N4148 (COL) A
6506	933543490133	DIO REC BYV27-50 A (PHSE) A
6507	319801021890	DIO REG BZX79-C18 A COL A
6515	933703700133	DIO REC BYV26E A (PHSE) A
6518	932218230687	DIO REC 5VUZ52 (TSOJ) L
6540	933497950683	DIO REC RGP10J A (GI00) R
6542	319801010010	DIO SIG 1N4148 (COL) A
6543	932211574682	DIO REC 31DF4-FC5 (NIEC0 B
6544	933751660683	DIO REC RGP10D A (GI00) R
6545	933751660683	DIO REC RGP10D A (GI00) R
6566	319801010010	DIO SIG 1N4148 (COL) A
6567	933504400683	DIO REC RGP15G A (GI00) R
6621	319801010010	DIO SIG 1N4148 (COL) A
6622	319801025180	DIO REG BZX79-C5V1 A COL A
6651	933751660683	DIO REC RGP10D A (GI00) R
6652	319801025180	DIO REG BZX79-C5V1 A COL A
6653	933913910115	DIO SIG SM BAS32L (PHSE) R
6654	933913910115	DIO SIG SM BAS32L (PHSE) R
6655	319801025180	DIO REG BZX79-C5V1 A COL A
6656	933913910115	DIO SIG SM BAS32L (PHSE) R
6671	933497950683	DIO REC RGP10J A (GI00) R
6672	932210388682	DIO REC 31DF6 A (INR0) B
6673	933751660683	DIO REC RGP10D A (GI00) R
6674	933612320113	DIO REC BY584 A (PHSE) R



7121	932214039682	IC STR-F6456(LF1352) (SAKJ) B
7122	933967380685	TRA SIG SM BC858C (ONSE) R
7130	932214014667	OPT CP TCET1103(G) (VISH) L
7132	933567120126	TRA SIG BC516 (PHSE) A
7133	932206519687	TRA POW BUX87 (ST00) L
7134	933953420676	TRA SIG TBC338-40 (TOSJ) A
7135	932214014667	OPT CP TCET1103(G) (VISH) L
7143	932209200687	IC L4940V5 (ST00) L
7144	933553530676	TRA SIG TBC548C (TOSJ) A
7145	932209265685	TRA SIG SM MUN2211J (ONSE) R
7155	932208367676	IC TL431CZ S (ST00) A
7161	933953420676	TRA SIG TBC338-40 (TOSJ) A
7191	933953420676	TRA SIG TBC338-40 (TOSJ) A
7301	823827443451	CPU IC (6148-K420PH-50A)
7301	823827443451	CPU IC (6148-K420PH-50A)
7302	933967380685	TRA SIG SM BC858C (ONSE) R
7303	933967310685	TRA SIG SM BC848C (ONSE) R
7304	932209265685	TRA SIG SM MUN2211J (ONSE) R
7336	932212662682	IC M24C16-BN6 (ST00) L
7363	933400610682	IC MC7812CT (MOTA) B
7364	933920810682	IC L7808CV (ST00) L
7391	932209265685	TRA SIG SM MUN2211J (ONSE) R
7392	933967380685	TRA SIG SM BC858C (ONSE) R
7404	933282660652	IC HEF4053BP (PHSE) L
7421	935267452112	IC TDA4856/V3 (PHSE) L
7422	933953420676	TRA SIG TBC338-40 (TOSJ) A
7423	933953410676	TRA SIG TBC328-40 (TOSJ) A
7424	932209265685	TRA SIG SM MUN2211J (ONSE) R
7425	933553530676	TRA SIG TBC548C (TOSJ) A
7426	933773860676	TRA SIG TBC558C (TOSJ) A
7427	933967380685	TRA SIG SM BC858C (ONSE) R
7461	933237780126	TRA SIG BC546B (PHSE) A
7462	933553530676	TRA SIG TBC548C (TOSJ) A
7463	933773860676	TRA SIG TBC558C (TOSJ) A
7464	319802043020	TRA SIG BF423 (COL) A
7465	319802043010	TRA SIG BF422 (COL) A
7466	932209265685	TRA SIG SM MUN2211J (ONSE) R
7501	934000540115	FET SIG SM BSP126 (PHSE) R

7502	932217972682	TRA POW 2SC5570 (TOSJ) L
7503	932205702687	TRA POW BD533 (ST00) L
7504	932205703687	TRA POW BD534 (ST00) L
7505	933984890682	IC LM358N (ST00) L
7541	932218090687	TRANS IRF730B
7542	932204822682	TRA POW 2SC2344E (TSAJ) B
7543	932204823682	TRA POW 2SA1011E (TSAJ) B
7544	933967380685	TRA SIG SM BC858C (ONSE) R
7545	319802043010	TRA SIG BF422 (COL) A
7566	932209265685	TRA SIG SM MUN2211J (ONSE) R
7567	931900234682	IC STV9379 (ST00) L
7586	933984890682	IC LM358N (ST00) L
7587	933221930126	TRA SIG BC637 (PHSE) A
7588	933221960126	TRA SIG BC638 (PHSE) A
7601	932206519687	TRA POW BUX87 (ST00) L
7620	932214232687	FET POW IRF640A (FSC0) L
7621	932214232687	FET POW IRF640A (FSC0) L
7622	932214562667	FET POW SLA5058 (SAKJ) L
7627	932209265685	TRA SIG SM MUN2211J (ONSE) R
7628	932209265685	TRA SIG SM MUN2211J (ONSE) R
7629	932209265685	TRA SIG SM MUN2211J (ONSE) R
7630	932209265685	TRA SIG SM MUN2211J (ONSE) R
7631	932209265685	TRA SIG SM MUN2211J (ONSE) R
7632	932209265685	TRA SIG SM MUN2211J (ONSE) R
7633	932209265685	TRA SIG SM MUN2211J (ONSE) R
7651	932212152682	IC L4990A (ST00) L
7652	933553530676	TRA SIG TBC548C (TOSJ) A
7653	933967380685	TRA SIG SM BC858C (ONSE) R
7654	933967310685	TRA SIG SM BC848C (ONSE) R
7671	934003960126	FET SIG BSN254A (PHSE) A
7672	932214646687	FET POW IRF740A (FSC0) L
7673	932213498687	FET POW FS7UM-16A (MITJ) L
7674	933553530676	TRA SIG TBC548C (TOSJ) A

1161 VIDEO PCB ASSY



2702	223858015636	CER2 0805 X7R 50V 10N PM10 R
2704	203803522801	ELCAP BP NK 160V S 1U PM20 A
2705	203803513907	ELCAP RGA 250V S 1U PM20 A
2706	242254944346	SURGE PROTECT DSP-201M-D04F A
2707	223891015649	CER2 0805 X7R 25V 100N PM10 R
2708	223891015649	CER2 0805 X7R 25V 100N PM10 R
2709	223891015649	CER2 0805 X7R 25V 100N PM10 R
2710	223886115479	CER1 0805 NP0 50V 47P PM5 R
2720	223886115479	CER1 0805 NP0 50V 47P PM5 R
2722	223858015636	CER2 0805 X7R 50V 10N PM10 R
2724	203803522801	ELCAP BP NK 160V S 1U PM20 A
2725	203803513907	ELCAP RGA 250V S 1U PM20 A
2726	242254944346	SURGE PROTECT DSP-201M-D04F A
2727	223891015649	CER2 0805 X7R 25V 100N PM10 R
2736	223858019814	CER2 0805 Y5V 50V 220N P8020 R
2740	223886115479	CER1 0805 NP0 50V 47P PM5 R
2742	223858015636	CER2 0805 X7R 50V 10N PM10 R
2744	203803522801	ELCAP BP NK 160V S 1U PM20 A
2745	203803513907	ELCAP RGA 250V S 1U PM20 A
2746	242254944346	SURGE PROTECT DSP-201M-D04F A
2748	203803513301	ELCAP RGA 25V S 47U PM20 A
2749	223891015649	CER2 0805 X7R 25V 100N PM10 R
2750	223891015649	CER2 0805 X7R 25V 100N PM10 R
2751	223891015649	CER2 0805 X7R 25V 100N PM10 R
2752	203803513707	ELCAP RGA 100V S 47U PM20 B
2753	203803513907	ELCAP RGA 250V S 1U PM20 A
2756	223886115101	CER1 0805 NP0 50V 100P PM5 R
2757	223886115101	CER1 0805 NP0 50V 100P PM5 R
2760	223891015649	CER2 0805 X7R 25V 100N PM10 R
2761	223555900099	CER2 DC 2KV S 10N PM20 B
2762	225260214416	CER2 DC X7R 2KV S 470P PM10 A




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ITEM	CODENUMBER	DESCRIPTION	ITEM	CODENUMBER	DESCRIPTION
2763	225261818021	CER2 DC Y5P 500V S 1N PM10 B	3722	319802154790	RST SM 0805 47R PM5 COL R
2764	202055890557	CERHDT RR 1KV S 1N PM10 A	3723	319802152290	RST SM 0805 22R PM5 COL R
2765	225260215216	CER2 DC X7R 2KV S 220P PM10 B	3724	232273061569	RST SM 0805 RC11 56R PM5 R
2766	223858016623	CER2 0805 X7R 50V 4N7 PM10 R	3725	319802151050	RST SM 0805 1M PM5 COL R
2767	223891015649	CER2 0805 X7R 25V 100N PM10 R	3726	231291515603	RST MFLM MBB0207 A 56K PM1 A
2768	223891015649	CER2 0805 X7R 25V 100N PM10 R	3727	213810113224	RST CRB CFR-12 A 220K PM5 A
2770	203803513501	ELCAP RGA 50V S 10U PM20 A	3728	319802158230	RST SM 0805 82K PM5 COL R
2771	223891015649	CER2 0805 X7R 25V 100N PM10 R	3729	212010128479	RST CMP ERC12 A 47R PM10 A
2772	203803513301	ELCAP RGA 25V S 47U PM20 A	3730	319802151020	RST SM 0805 1K PM5 COL R
2773	223891015649	CER2 0805 X7R 25V 100N PM10 R	3731	319802151230	RST SM 0805 12K PM5 COL R
2774	223891015649	CER2 0805 X7R 25V 100N PM10 R	3732	319802152220	RST SM 0805 2K2 PM5 COL R
2775	203803513204	ELCAP RGA 16V S 330U PM20 A	3733	319802151810	RST SM 0805 180R PM5 COL R
2776	223891015649	CER2 0805 X7R 25V 100N PM10 R	3734	319802151010	RST SM 0805 100R PM5 COL R
2777	203803513301	ELCAP RGA 25V S 47U PM20 A	3735	319802154710	RST SM 0805 470R PM5 COL R
2778	223891015649	CER2 0805 X7R 25V 100N PM10 R	3736	319802151010	RST SM 0805 100R PM5 COL R
2779	203803513707	ELCAP RGA 100V S 47U PM20 B	3737	319802151050	RST SM 0805 1M PM5 COL R
2780	222236525104	CAP MPOL 100V S 100N PM10 A	3738	319802151050	RST SM 0805 1M PM5 COL R
2781	203803513907	ELCAP RGA 250V S 1U PM20 A	3741	232273467509	RST SM 0805 RC12H 75R PM1 R
2782	222236555103	CAP MPOL 400V S 10N PM10 A	3742	319802154790	RST SM 0805 47R PM5 COL R
2783	223886115229	CER1 0805 NP0 50V 22P PM5 R	3743	319802152290	RST SM 0805 22R PM5 COL R
2784	223886115229	CER1 0805 NP0 50V 22P PM5 R	3744	232273061569	RST SM 0805 RC11 56R PM5 R
2785	223886115229	CER1 0805 NP0 50V 22P PM5 R	3745	319802151050	RST SM 0805 1M PM5 COL R
2786	223886115229	CER1 0805 NP0 50V 22P PM5 R	3746	231291515603	RST MFLM MBB0207 A 56K PM1 A
2787	223891015649	CER2 0805 X7R 25V 100N PM10 R	3747	213810113224	RST CRB CFR-12 A 220K PM5 A
2788	223891015649	CER2 0805 X7R 25V 100N PM10 R	3748	319802158230	RST SM 0805 82K PM5 COL R
2789	223886115101	CER1 0805 NP0 50V 100P PM5 R	3749	212010128479	RST CMP ERC12 A 47R PM10 A
2790	223886115101	CER1 0805 NP0 50V 100P PM5 R	3750	319802151020	RST SM 0805 1K PM5 COL R
2791	203803513201	ELCAP RGA 16V S 100U PM20 A	3751	319802151230	RST SM 0805 12K PM5 COL R
2792	223858016623	CER2 0805 X7R 50V 4N7 PM10 R	3755	319802190020	RST SM 0805 JUMP. 0R05 COL R
2793	223886115101	CER1 0805 NP0 50V 100P PM5 R	3760	212010128153	RST CMP ERC12 A 15K PM10 A
2797	222236555103	CAP MPOL 400V S 10N PM10 A	3761	231291511503	RST MFLM MBB0207 A 15K PM1 A
2798	203803513201	ELCAP RGA 16V S 100U PM20 A	3763	212010128152	RST CMP ERC12 A 1K5 PM10 A
2799	223891015649	CER2 0805 X7R 25V 100N PM10 R	3765	231291511804	RST MFLM MBB0207 A 180K PM1 A
2801	223858015636	CER2 0805 X7R 50V 10N PM10 R	3766	319802151010	RST SM 0805 100R PM5 COL R
2802	223886115101	CER1 0805 NP0 50V 100P PM5 R	3767	319802151010	RST SM 0805 100R PM5 COL R
2803	223891015649	CER2 0805 X7R 25V 100N PM10 R	3768	319802151020	RST SM 0805 1K PM5 COL R
2804	223886115181	CER1 0805 NP0 50V 180P PM5 R	3769	319802151520	RST SM 0805 1K5 PM5 COL R
2805	223891015649	CER2 0805 X7R 25V 100N PM10 R	3783	319802151020	RST SM 0805 1K PM5 COL R
2806	223891015649	CER2 0805 X7R 25V 100N PM10 R	3785	319802151020	RST SM 0805 1K PM5 COL R
2807	223891015649	CER2 0805 X7R 25V 100N PM10 R	3786	319802151030	RST SM 0805 10K PM5 COL R
2811	203803513907	ELCAP RGA 250V S 1U PM20 A	3787	319802153320	RST SM 0805 3K3 PM5 COL R
2812	223858016614	CER2 0805 X7R 50V 1N PM10 R	3788	319802151010	RST SM 0805 100R PM5 COL R
2813	223858016621	CER2 0805 X7R 50V 3N3 PM10 R	3789	319802151010	RST SM 0805 100R PM5 COL R
2814	223891015649	CER2 0805 X7R 25V 100N PM10 R	3790	319802151030	RST SM 0805 10K PM5 COL R
2815	223891015649	CER2 0805 X7R 25V 100N PM10 R	3791	319802153320	RST SM 0805 3K3 PM5 COL R
2821	223858016614	CER2 0805 X7R 50V 1N PM10 R	3792	232273464702	RST SM 0805 RC12H 4K7 PM1 R
2822	223858016621	CER2 0805 X7R 50V 3N3 PM10 R	3801	319802154720	RST SM 0805 4K7 PM5 COL R
2831	223858016614	CER2 0805 X7R 50V 1N PM10 R	3802	319802155620	RST SM 0805 5K6 PM5 COL R
2832	223858016621	CER2 0805 X7R 50V 3N3 PM10 R	3803	319802154720	RST SM 0805 4K7 PM5 COL R
			3804	319802151050	RST SM 0805 1M PM5 COL R
			3805	319802151030	RST SM 0805 10K PM5 COL R
			3806	319802153310	RST SM 0805 330R PM5 COL R
			3807	319802151530	RST SM 0805 15K PM5 COL R
			3808	319802151230	RST SM 0805 12K PM5 COL R
			3809	319802152240	RST SM 0805 220K PM5 COL R
			3811	232273061184	RST SM 0805 RC11 180K PM5 R
			3812	319802156840	RST SM 0805 680K PM5 COL R
			3813	319802154730	RST SM 0805 47K PM5 COL R
			3815	319802151030	RST SM 0805 10K PM5 COL R
			3816	319802151020	RST SM 0805 1K PM5 COL R
			3821	232273061184	RST SM 0805 RC11 180K PM5 R
			3822	319802156840	RST SM 0805 680K PM5 COL R
			3823	319802154730	RST SM 0805 47K PM5 COL R
			3825	319802151030	RST SM 0805 10K PM5 COL R
			3831	232273061184	RST SM 0805 RC11 180K PM5 R
			3832	319802156840	RST SM 0805 680K PM5 COL R
			3833	319802154730	RST SM 0805 47K PM5 COL R
			3835	319802151030	RST SM 0805 10K PM5 COL R
			3836	319802151030	RST SM 0805 10K PM5 COL R
			3841	319802151030	RST SM 0805 10K PM5 COL R
3701	232273467509	RST SM 0805 RC12H 75R PM1 R			
3702	319802154790	RST SM 0805 47R PM5 COL R			
3703	319802152290	RST SM 0805 22R PM5 COL R			
3704	232273061569	RST SM 0805 RC11 56R PM5 R			
3705	319802151050	RST SM 0805 1M PM5 COL R			
3706	231291515603	RST MFLM MBB0207 A 56K PM1 A			
3707	213810113224	RST CRB CFR-12 A 220K PM5 A			
3708	319802158230	RST SM 0805 82K PM5 COL R			
3709	212010128479	RST CMP ERC12 A 47R PM10 A			
3710	319802151020	RST SM 0805 1K PM5 COL R			
3711	319802151230	RST SM 0805 12K PM5 COL R			
3712	319802151020	RST SM 0805 1K PM5 COL R			
3713	319802151010	RST SM 0805 100R PM5 COL R			
3714	319802151010	RST SM 0805 100R PM5 COL R			
3715	319802151010	RST SM 0805 100R PM5 COL R			
3717	319802154710	RST SM 0805 470R PM5 COL R			
3718	319802154710	RST SM 0805 470R PM5 COL R			
3721	232273467509	RST SM 0805 RC12H 75R PM1 R			

CODENUMBER	DESCRIPTION	ITEM	CODENUMBER	DESCRIPTION
319802151030	RST SM 0805 10K PM5 COL R	6821	933137380215	DIO REG SM BZX84-C4V7 (PHSE)
319802151030	RST SM 0805 10K PM5 COL R	6822	933913910115	DIO SIG SM BAS32L (PHSE)
319802151030	RST SM 0805 10K PM5 COL R	6823	319801010620	DIO SIG SM BAV99 (COL) R
319802151010	RST SM 0805 100R PM5 COL R	6831	933137380215	DIO REG SM BZX84-C4V7 (PHSE)
319802151010	RST SM 0805 100R PM5 COL R	6832	933913910115	DIO SIG SM BAS32L (PHSE)
319802190020	RST SM 0805 JUMP. 0R05 COL R	6833	319801010620	DIO SIG SM BAV99 (COL) R
				
		7701	935264061112	IC TDA4887PS/V1 (PHSE)
		7705	932213801667	IC LM2402T (NSC0) L
		7706	319802043010	TRA SIG BF422 (COL) A
		7707	319802043010	TRA SIG BF422 (COL) A
		7726	319802043010	TRA SIG BF422 (COL) A
		7727	319802043010	TRA SIG BF422 (COL) A
		7746	319802043010	TRA SIG BF422 (COL) A
		7747	319802043010	TRA SIG BF422 (COL) A
242253597069	IND FXD SP0305 A 4U7 PM10 B	7781	932218254682	IC WT6803-N160PH-06AB (WESE) L
313817876911	COIL 0.12UH PM10	7782	932209265685	TRA SIG SM MUN2211J (ONS)
242254944197	IND FXD 0805 EMI 100MHZ 220R R	7783	932209265685	TRA SIG SM MUN2211J (ONS)
313816879121	FERRITE BEAD SMD (FB423226T-Y7	7801	932216309682	IC WT62P2 (WESE) L
313817876911	COIL 0.12UH PM10	7801	932216309682	IC WT62P2 (WESE) L
242254944197	IND FXD 0805 EMI 100MHZ 220R R	7801	932206163682	IC TL072CN (ST00) L
313817876911	COIL 0.12UH PM10	7802	933669110652	IC 74HC4066N (PHSE) L
242254944197	IND FXD 0805 EMI 100MHZ 220R R	7803	319802043020	TRA SIG BF423 (COL) A
242254944197	IND FXD 0805 EMI 100MHZ 220R R	7804	319802043020	TRA SIG BF423 (COL) A
242253597069	IND FXD SP0305 A 4U7 PM10 B	7805	319802043020	TRA SIG BF423 (COL) A
242254944197	IND FXD 0805 EMI 100MHZ 220R R	7806	933706060112	IC PCF8574P (PHSE) L
242254944197	IND FXD 0805 EMI 100MHZ 220R R	7807	933967310685	TRA SIG SM BC848C (ONSE)
242254944197	IND FXD 0805 EMI 100MHZ 220R R	7808	319802043020	TRA SIG BF423 (COL) A
313816874511	FERRITE BEAD	7809	319802043020	TRA SIG BF423 (COL) A
242254944197	IND FXD 0805 EMI 100MHZ 220R R	7810	319802043020	TRA SIG BF423 (COL) A
242254944197	IND FXD 0805 EMI 100MHZ 220R R			
242254944197	IND FXD 0805 EMI 100MHZ 220R R			
242254944197	IND FXD 0805 EMI 100MHZ 220R R			
242254944197	IND FXD 0805 EMI 100MHZ 220R R			
242254944197	IND FXD 0805 EMI 100MHZ 220R R			
242253597069	IND FXD SP0305 A 4U7 PM10 B	1162	TERMINAL PCB ASSY	
313816874511	FERRITE BEAD			
242254942026	IND FXD BEAD EMI 100MHZ 50R A			
242253597069	IND FXD SP0305 A 4U7 PM10 B	2001	202202000697	ELCAP SEA 10V S 220U PM2
242253597069	IND FXD SP0305 A 4U7 PM10 B	2002	202202000699	ELCAP SEA 16V S 220U PM2
313817878601	BEAD 07UH VERT.	2003	203803500037	ELCAP SM 16V S 47U PM2
242253597069	IND FXD SP0305 A 4U7 PM10 B	2004	203803500037	ELCAP SM 16V S 47U PM2
242254944197	IND FXD 0805 EMI 100MHZ 220R R	2005	203803500037	ELCAP SM 16V S 47U PM2
242254944197	IND FXD 0805 EMI 100MHZ 220R R	2007	203803500037	ELCAP SM 16V S 47U PM2
		2008	223891015649	CER2 0805 X7R 25V 100N PM
		2010	223891015649	CER2 0805 X7R 25V 100N PM
		2011	203803500037	ELCAP SM 16V S 47U PM2
933952580685	DIO SIG SM BAV103 (TEGO) R	2013	203803500037	ELCAP SM 16V S 47U PM2
933952580685	DIO SIG SM BAV103 (TEGO) R	2017	223891015649	CER2 0805 X7R 25V 100N PM
933952580685	DIO SIG SM BAV103 (TEGO) R	2018	223886115109	CER1 0805 NP0 50V 10P PM3
933952580685	DIO SIG SM BAV103 (TEGO) R	2019	223886115109	CER1 0805 NP0 50V 10P PM3
933913910115	DIO SIG SM BAS32L (PHSE) R	2020	223886115109	CER1 0805 NP0 50V 10P PM3
933952580685	DIO SIG SM BAV103 (TEGO) R	2021	223886115109	CER1 0805 NP0 50V 10P PM3
933952580685	DIO SIG SM BAV103 (TEGO) R	2023	202202000697	ELCAP SEA 10V S 220U PM2
933952580685	DIO SIG SM BAV103 (TEGO) R	2025	202202000697	ELCAP SEA 10V S 220U PM2
933952580685	DIO SIG SM BAV103 (TEGO) R	2027	202202000697	ELCAP SEA 10V S 220U PM2
933913910115	DIO SIG SM BAS32L (PHSE) R	2031	223886115229	CER1 0805 NP0 50V 22P PM3
933913910115	DIO SIG SM BAS32L (PHSE) R	2032	223886115229	CER1 0805 NP0 50V 22P PM3
319801010620	DIO SIG SM BAV99 (COL) R	2033	223886115229	CER1 0805 NP0 50V 22P PM3
933952580685	DIO SIG SM BAV103 (TEGO) R	2034	223886115229	CER1 0805 NP0 50V 22P PM3
933952580685	DIO SIG SM BAV103 (TEGO) R	2035	223891015649	CER2 0805 X7R 25V 100N PM
933952580685	DIO SIG SM BAV103 (TEGO) R	2036	223891015649	CER2 0805 X7R 25V 100N PM
933952580685	DIO SIG SM BAV103 (TEGO) R			
933913910115	DIO SIG SM BAS32L (PHSE) R			
933493960683	DIO REC RGP10G A (GI00) R			
933500820133	DIO REG BZV85-C51 A (PHSE) A	3001	319802152220	RST SM 0805 2K2 PM5 COL
933913910115	DIO SIG SM BAS32L (PHSE) R	3004	319802152220	RST SM 0805 2K2 PM5 COL
933913910115	DIO SIG SM BAS32L (PHSE) R	3006	319802154790	RST SM 0805 47R PM5 COL
933913910115	DIO SIG SM BAS32L (PHSE) R	3007	232273467509	RST SM 0805 RC12H 75R PM
933137380215	DIO REG SM BZX84-C4V7 (PHSE) R	3008	319802154790	RST SM 0805 47R PM5 COL

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6191	319801010010	DIO SIG 1N4148	(COL) A
6192	319801010070	DIO SIG BAV21	(COL) A
6193	319801010070	DIO SIG BAV21	(COL) A
6194	319801010010	DIO SIG 1N4148	(COL) A

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M25P 202P4
GENERAL PRODUCT
SPECIFICATION

MICRO PROCESSOR-BASED DIGITAL CONTROL WITH 36 FACTORY MODES, 9 PRESET MODES AND 16 USER MODES TO ENSURE PICTURE CONFIGURATIONS ARE ALWAYS MAINTAINED WHEN SWITCH BETWEEN COMMON VIDEO MODES AND USER DEFINED CUSTOM MODES.

- . USER FRIENDLY OSD DISPLAY FOR MODE IDENTIFICATION/ADJUSTMENT
- . DDC1/ 2B COMMUNICATION CAPABILITY
- . CUSTOMAX (OPTION) FOR MONITOR CONTROL AND ADJUSTMENT
- . MAX. RESOLUTION 2048 X 1536 NON-INTERLACED AT 75 HZ
- . 21" 0.24 MM (at enter) AG MASK NF PICTURE TUBE
- . EASY TILT & SWIVEL BASE
- . FULL RANGE POWER SUPPLY 90 - 264 VAC
- . CE ENVIRONMENTAL POLICY
- . FLAT SQUARE TUBE TO REDUCE LIGHT REFLECTION
- . POWER MANAGEMENT CAPABILITY
- . PROVIDE USB HUB & DEVICE FUNCTION (OPTION)
- . LOW EMISSION TCO 99
- . MOIRE' CANCELLATION
- . AUTO CALIBRATE FUNCTION
- . sRGB

CLASS NO.		22" AUTO SCAN CMTR-M25P-202P4			
		TYPE : 202P40/00C		8639 000 11833	
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22"AUTO SCAN CMTR-M25P-202P4

TYPE : 202P40/00C

BRAND : PHILIPS

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1.0 FOREWORD

This specification describes a 21" high resolution digitally controlled autoscan color monitor with max. resolution up to 2048x1536/75Hz non-interlaced.

2.0 PRODUCT PROFILE

This display monitor unit is a complete color display monitor enclosed in PHILIPS global styling cabinet which has an integrated tilt and swivel base.

2.1 CRT

- Type NR. : M51LRY 32X62 (MITSUBISHI)
- Dimensions : 22" NF
- Phosphor Pitch (mm) : 0.24
- Phosphor : B22
- Mask : AG
- Deflection angle : 90 deg
- Light transmission : 38.4 %

- Surface of plate : Sputter coating
- EHT : 27.0 KV
- Useful screen (mm) : 406.1 x 304.6

2.2 Scanning frequencies

Hor. : 30 - 130KHz Ver. : 50 - 160 Hz

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- 2.3 Video dot rate : 320MHz
 2.4 Power input : 90 - 264 Vac, 47-63 Hz
 2.5 Power consumption : 140W typ.
 2.6 Dimensions : 501(W) x 501.8(H) x 465.8(D) mm
 2.7 Weight : 26 kg

2.8 Functions :

- (1) R/G/B separate analog inputs, H/V composite sync, sync. on green.
 (2) Automatic (Power on) and manual degaussing circuit.

2.9 Ambient temperature : 0 - 35 C

2.10 Regulatory compliance :

- (1) Safety : UL 1950
 : CSA C22.2 NO. 950
 : IEC950/ EN60950

- (2) EMI : FCC PART 15 class B
 : D.O.C. Class B
 : EN55022 Class B
 : CE mark
 : CNS 13438

EMS : EN61000-4-3(80% 1KHz AM modulation) picture jitter < 2mm

- (3) X-RAY Radiation requirement / regulation
 : DHHS 21 CFR Subchapter J.
 : ROEV / 08.01.1987

- (4) Low Radiation
 : TCO99

- (5) Environmental
 : Per CE and BU policy

- (6) Ergonomic Requirements
 : ZH 1/618
 : EN 9241-3 / ISO 9241-3 (7/92) / ISO 9241-8

- (7) Harmonic distortion regulation: Meet IEC 1000-3-2

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3.0 Electrical characteristics

3.1 Interface signals

The input signals can be applied in two different modes :

- 1). Video, Hsync., Vsync.
- 2). Video, Composite Sync

Video : 0.7 Vp-p, input impedance, 75 ohm

Sync. : Separate sync	TTL level, input impedance 2k2 ohm
Hor. sync	Positive/Negative
Ver. sync	Positive/Negative
Composite sync	TTL level, input impedance 2k2 ohm
	Positive/Negative

3.2 Interface

3.2.1 Cable

The input signals are applied to the display through a detachable shielded cable.

Length : 1.5 m +/- 50 mm (detachable)

Connector type : 15 pin D-Sub male to 15 pin D-Sub male, blue
IBM PS/2 standard (3 rows)
with DDC2B pin assignments

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pin assignments :

pin no.	
1	Red video input
2	Green video input
3	Blue video input
4	Optional - connected to pin 10
5	Not connected
6	Red video ground
7	Green video ground
8	Blue video ground
9	+5V
10	Sync ground
11	Optional - connected to pin 10
12	Bi-directional data (SDA)
13	H/H+V sync
14	V sync (VCLK)
15	Data clock (SCL)

3.2.2 Adaptor 15 pin D-standard (2 rows male) to 15 pin D-sub (female)

for Apple MacIntosh II use.

pin no	15 Pin D-standard
1	RED GND
2	RED VIDEO
3	COMPOSITE SYNC
4	SYNC GND
5	GREEN VIDEO
6	GREEN GND
7	NC
8	NC
9	BLUE VIDEO
10	NC
11	NC
12	NC
13	BLUE GND
14	NC
15	NC



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3.2.3 Software control functions via OSD/control

- Adjustable functions:

Main Controls
Language
Input signal selection
Zoom
Adjust horizontal
Adjust vertical
Adjust shape
Adjust color
Reset to factory settings
Extra Controls
Close Main Controls
Move selection then OK

Language

-Language : multi-language(at least 5 language)

Input

-Input signal selection

Zoom

- Zoom

Adjust horizontal

-Adjust position

-Adjust size

Adjust vertical

-Adjust position

-Adjust size

Adjust shape

-Adjust side curve

Pincushion

Balanced

-Adjust side angles

Trapezoid

Parallelogram

-Rotate image

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Adjust color

- 9300^oK for general use
- 6500^oK for image management
- 5500^oK for photoretouch
- sRGB
- User preset

Reset to factory settings

- No
- Yes

Extra Controls

- degauss
- Adjust
 - moire
- Adjust convergence
 - Horizontal
 - Vertical
- Adjust purity
 - Top left
 - Top right
 - Bottom left
 - Bottom right
- Auto calibrate

3.3 Timing requirement

3.3.1 Mode storing capacity

Total factory modes : 36
Preset modes : 9
User modes : 16

3.3.2 Factory preset timings

The factory settings of size and centering are according to the reference timing charts (see fig-8, fig-9)

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MODE NO.	1	2	3	4
RESOLUTION	640 x 480	720 x 400	640 x 480	640 x 480
Dot clock(MHz)	25.175	28.321	31.500	31.500
f h	31.469 kHz	31.468 kHz	37.500 KHz	37.861 kHz
A (us)	31.778	31.778	26.667	26.413
B (us)	3.813	3.813	2.032	1.270
C (us)	1.907	1.907	3.810	3.810
D (us)	25.422	25.423	20.317	20.317
E (us)	0.636	0.325	0.508	1.016
f v	59.941 Hz	70.084 Hz	75.000 Hz	72.810 Hz
O (ms)	16.683	14.268	13.333	13.735
P (ms)	0.064	0.064	0.080	0.079
Q (ms)	1.049	1.112	0.427	0.528
R (ms)	15.253	12.711	12.800	12.678
S (ms)	0.317	0.382	0.026	0.45
SYNC. H/V	- / -	- / +	- / -	- / -
POLARITY				
SEP . SYNC	Y	Y	Y	Y

MODE NO.	5	6	7	8
RESOLUTION	800x600	640 x 480	800 x 600	800 x 600
Dot clock(MHz)	40.000	36.000	49.500	50.000
f h	37.879 kHz	43.269 kHz	46.875 kHz	48.077 kHz
A (us)	26.400	23.111	21.333	20.800
B (us)	3.200	1.556	1.616	2.400
C (us)	2.200	2.222	3.232	1.280
D (us)	20.000	17.778	16.162	16.000
E (us)	1.000	1.555	0.323	1.12
f v	60.317Hz	85.008 Hz	75.000 Hz	72.188 Hz
O (ms)	16.579	11.763	13.333	13.853
P (ms)	0.106	0.069	0.064	0.125
Q (ms)	0.607	0.578	0.448	0.478
R (ms)	15.840	11.093	12.800	12.480
S (ms)	0.026	0.023	0.021	0.77
SYNC. H/V	+ / +	- / -	+ / +	+ / +
POLARITY				
SEP . SYNC	Y	Y	Y	Y

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MODE NO.	17	18	19	20
RESOLUTION	1280 x 1024	1024 x 768	1152 x 870	1856 x 1392
Dot clock(MHz)	108.000	94.500	100.000	317.914
f h	63.981 kHz	68.677 kHz	68.681 kHz	124.185KHz
A (us)	15.630	14.561	14.560	8.053
B (us)	1.037	1.016	1.280	0.654
C (us)	2.296	2.201	1.440	1.107
D (us)	11.852	10.836	11.520	5.838
E (us)	0.445	0.508	0.32	0.453
f v	60.020 Hz	84.997 Hz	74.979 Hz	85.000Hz
O (ms)	16.661	11.765	13.333	11.765
P (ms)	0.047	0.044	0.044	0.024
Q (ms)	0.594	0.524	0.568	0.523
R (ms)	16.005	11.183	12.678	11.209
S (ms)	0.015	0.014	0.043	0.008
SYNC. H/V POLARITY	+ / +	+ / +	- / -	+ / +
SEP . SYNC	Y	Y	Y	Y

MODE NO.	21	22	23	24
RESOLUTION	1920 x1440	1600 x 1200	1280 x1024	1600 x 1200
Dot clock(MHz)	341.349	162.000	135.00	175.500
f h	128.520KHz	75.000 kHz	79.976 kHz	81.250 kHz
A (us)	7.781	13.333	12.504	12.308
B (us)	0.633	1.185	1.067	1.094
C (us)	1.078	1.877	1.837	1.732
D (us)	5.625	9.877	9.481	9.117
E (us)	0.445	0.394	0.119	0.365
f v	85.000Hz	60.000 Hz	75.024 Hz	65.000 Hz
O (ms)	11.765	16.667	13.329	15.385
P (ms)	0.023	0.040	0.038	0.037
Q (ms)	0.529	0.613	0.475	0.566
R (ms)	11.205	16.000	12.804	14.769
S (ms)	0.008	0.014	0.012	0.013
SYNC. H/V POLARITY	+ / +	+ / +	+ / +	+ / +
SEP . SYNC	Y	Y	Y	Y

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MODE NO.	17	18	19	20
RESOLUTION	1280 x 1024	1024 x 768	1152 x 870	1856 x 1392
Dot clock(MHz)	108.000	94.500	100.000	317.914
f h	63.981 kHz	68.677 kHz	68.681 kHz	124.185KHz
A (us)	15.630	14.561	14.560	8.053
B (us)	1.037	1.016	1.280	0.654
C (us)	2.296	2.201	1.440	1.107
D (us)	11.852	10.836	11.520	5.838
E (us)	0.445	0.508	0.32	0.453
f v	60.020 Hz	84.997 Hz	74.979 Hz	85.000Hz
O (ms)	16.661	11.765	13.333	11.765
P (ms)	0.047	0.044	0.044	0.024
Q (ms)	0.594	0.524	0.568	0.523
R (ms)	16.005	11.183	12.678	11.209
S (ms)	0.015	0.014	0.043	0.008
SYNC. H/V POLARITY	+ / +	+ / +	- / -	+ / +
SEP . SYNC	Y	Y	Y	Y

MODE NO.	21	22	23	24
RESOLUTION	1920 x1440	1600 x 1200	1280 x1024	1600 x 1200
Dot clock(MHz)	341.349	162.000	135.00	175.500
f h	128.520KHz	75.000 kHz	79.976 kHz	81.250 kHz
A (us)	7.781	13.333	12.504	12.308
B (us)	0.633	1.185	1.067	1.094
C (us)	1.078	1.877	1.837	1.732
D (us)	5.625	9.877	9.481	9.117
E (us)	0.445	0.394	0.119	0.365
f v	85.000Hz	60.000 Hz	75.024 Hz	65.000 Hz
O (ms)	11.765	16.667	13.329	15.385
P (ms)	0.023	0.040	0.038	0.037
Q (ms)	0.529	0.613	0.475	0.566
R (ms)	11.205	16.000	12.804	14.769
S (ms)	0.008	0.014	0.012	0.013
SYNC. H/V POLARITY	+ / +	+ / +	+ / +	+ / +
SEP . SYNC	Y	Y	Y	Y

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MODE NO.	25	26	27	28
RESOLUTION	1792 x 1344	1920 x1440	1856 x 1392	1600 x 1200
Dot clock(MHz)	204.750	320.207	218.250	189.000
f h	83.640 kHz	120.56HKz	86.333 kHz	87.500 kHz
A (us)	11.956	8.295	11.583	11.429
B (us)	0.977	0.675	1.026	1.016
C (us)	1.602	1.149	1.489	1.608
D (us)	8.752	5.996	8.504	8.466
E (us)	0.625	0.475	0.564	0.339
f v	59.999 Hz	80.000Hz	59.995 Hz	70.000 Hz
O (ms)	16.667	12.50	16.668	14.286
P (ms)	0.036	0.025	0.035	0.034
Q (ms)	0.550	0.523	0.498	0.526
R (ms)	16.069	11.944	16.124	13.715
S (ms)	0.012	0.008	0.011	0.011
SYNC. H/V POLARITY	+ / +	+ / +	+ / +	+ / +
SEP . SYNC	Y	Y	Y	Y

MODE NO.	29	30	31	32
RESOLUTION	1920 x 1440	1280 x 1024	1600 x 1200	1600 x 1200
Dot clock(MHz)	234.000	157.500	202.500	229.500
f h	90.000 kHz	91.146 kHz	93.750 kHz	106.250 kHz
A (us)	11.111	10.971	10.667	9.412
B (us)	0.889	1.016	0.948	0.837
C (us)	1.470	1.422	1.501	1.325
D (us)	8.205	8.127	7.901	6.972
E (us)	0.547	0.406	0.317	0.278
f v	60.000 Hz	85.024 Hz	75.000 Hz	85.000 Hz
O (ms)	16.667	11.761	13.334	11.765
P (ms)	0.033	0.033	0.032	0.028
Q (ms)	0.622	0.483	0.491	0.433
R (ms)	16.000	11.234	12.800	11.294
S (ms)	0.012	0.011	0.011	0.01
SYNC. H/V POLARITY	+ / +	+ / +	+ / +	+ / +
SEP . SYNC	Y	Y	Y	Y

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MODE NO.	33	34	35	36
RESOLUTION	1792 x 1344	1920 x 1440	2048 x 1536	2048 x 1536
Dot clock(MHz)	261.000	297.000	319.915	355.03
f h	106.270 kHz	112.5 kHz	120.450 kHz	130KHz
A (us)	9.410	8.889	8.302	7.692
B (us)	0.828	0.754	0.675	0.625
C (us)	1.349	1.185	1.025	0.949
D (us)	6.866	6.465	6.402	5.769
E (us)	0.367	0.485	0.200	0.349
f v	74.997 Hz	75.000 Hz	75.000 Hz	80Hz
O (ms)	13.334	13.333	13.333	12.5
P (ms)	0.028	0.027	0.025	0.023
Q (ms)	0.649	0.498	0.548	0.508
R (ms)	12.647	12.800	12.752	11.815
S (ms)	0.01	0.008	0.008	0.154
SYNC. H/V POLARITY	+ / +	+ / +	+ / +	+ / +
SEP . SYNC	Y	Y	Y	Y

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3.3.3 Horizontal scanning

Sync polarity : Positive or Negative
Scanning frequency : 30 - 130 KHz
Retrace time : 1.5 sec (typical)

3.3.4 Vertical scanning

Sync polarity : Positive or Negative
Scanning frequency : 50 - 160 Hz

3.4 Power input connection

Power cord length : 1.5 M
Power cord type : 3 leads detachable power cord with protective
earth plug.

3.5 Video amplifiers

Rise time/Fall time : 4.0 / 4.5 ns
(excluding rise/fall time due to test pattern & test probe)
Overshoot/undershoot : Max. 12%
Black level shift : Max. 3%
Sag : Max. 5%

3.6 Degaussing

An automatic degaussing circuit is provided and required no intervention.
The degaussing is activated at the time of switch-on and power saving
wake up or switch-on again after switched-off for longer than 30 minutes.
Manual degaussing is provided to eliminate any color impurity.

3.7 Requirement for low emission

(1) Electro static potential : < +/- 0.5 KV

(2) Alternating Elec. field

ELF 5 - 2 KHz : ≤ 10.0 V/M
VLF 2 - 400 KHz : ≤ 1.0 V/M

(3) Magnetic field

ELF 5 - 2 KHz : ≤ 200 nT
VLF 2 - 400 KHz : ≤ 25 nT

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3.8 Power management

The power consumption and the status indication of the set with power management function are as follows,

STATUS	Horizontal	Vertical	Power Spec	LED
On	Pulse	Pulse	as normal on	Green
OFF	No Pulse	Pulse	< 2 W	Yellow
OFF	Pulse	No Pulse	< 2 W	Yellow
OFF	No Pulse	No Pulse	< 2 W	Yellow

Entering from ON state to Power saving state must has 5 - 10 second time delay. It must awake from Suspend state to On state within 3 seconds.

Compliant with TCO99 power saving requirement
EPA energy star requirement
E2000

3.9 Display identification

In accordance with VESA Display Channel Standard V1.0 and having DDC 1 and DDC 2B capability

3.10 Customax (option)

The Customax provides the following control and adjustment capability, detailed please see the document "Software for your monitor".

1. Screen geometry control: H-size, V-size, H-shift, V-shift, Tilt, Parallelogram, Trapezoid, Symmetry, Pincushion, background Pattern, etc.
2. Image quality control: Color temperature, etc.
3. Monitor behavior control: Setting reset, Power saver, Color reset, etc.
4. Information on current settings
5. Preferences

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4.0 Visual characteristics

4.1 Test conditions

Unless otherwise specified, this specification is defined under the following conditions.

- (1) Input signal: As defined in 3.3, 1280 x 768 non-interlaced mode (68.7 KHz), signal sources must have 75 ohm output impedance.
- (2) Luminance setting: controls to be set to 20 ft-lb with full screen 100 % duty cycle white signal.
- (3) Warm up: more than 30 minutes after power on with signal supplied.
- (4) Ambient light: 400 -- 600 lux.
- (5) Ambient temperature: 20+/- 5 c
- (6) Ambient magnetic field: no special ambient magnetic field existed.
(the ac leakage flux, dc flux caused by transformer magnet, etc.)
- (7) CRT face: East

4.2 Resolution

Inspection modes (9 modes) :

Mode	Resolution	H. freq. / V. freq	Standard
1.	1024 x 768	60.023Khz/75.029Hz	(VESA/75)
2.	1024 x 768	68.677Khz/84.997Hz	(VESA/85)
3.	1280 x 1024	79.976Khz/75.024Hz	(VESA/75)
4.	1280 x 1024	91.146Khz/85.024Hz	(VESA/85)
5.	1600 x 1200	93.75Khz/75.000Hz	(VESA/75)
6.	1600 x 1200	106.25Khz/85.000Hz	(VESA/85)
7.	1792 x 1344	106.3Khz/75.000Hz	(VESA/75)
8.	1920 x 1440	112.5Khz/75.000Hz	(VESA/75)
9.	1920 x 1440	128.5Khz/85.000Hz	

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4.3 Brightness

Color Temp	Brightness control	Contrast control	White Square (see fig-5)	Full white
	CENTER	MIN		0 FL
@9300 K	CENTER	MAX	32 FL	30 FL
@6500 K	CENTER	MAX	28 FL	
@5500 K	CENTER	MAX	25 FL	

4.3.1 sRGB

Once press sRGB function on OSD , the lumilance shall be changed to 23 3ft-lb and color temprature is matching to 6500K,at white square pattern.

4.4 Flagwaving - jitter

less than 0.15 mm

4.5 Image size

4.5.1 Actual display size

The dimensions of the data area, measured along the picture center of horizontal and vertical axis of the screen, are listed below: (see Fig 1)

(392 4 mm) X (294 4 mm)

4.5.2 Max scan size

Maximum active video size should be not smaller than mask opening. The mask opening is 406.1 x 304.6 mm.

4.6 Image centering deviation

| A-B | and | C-D | 6 mm, please see Fig 2

4.7 Picture shift range

H-shift range : total 30 mm.

V-shift range : total 15 mm.

4.8 Display dimension stability

Due to brightness : 1.0 %

Due to aging : 1.0 %

Due to mains voltage : 1.0 %

Dynamic : < 1mm

4.9 Geometric distortions

Pincushion, trapezoid, parallelogram, rotation and other various distortions must remain within the limits to tolerance as in Fig. 4.

top/ bottom/left/ right : 2.5 mm Max.

top plus bottom / left plus right : 3.5 mm Max.

waviness : 1.5mm/ 50mm Max.

slope change (Max) : one

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- 4.10 Picture tilt
1mm (see Fig. 3)
User adjust range for tilt : 1 deg. min.

4.11 Image non-linearity

Horizontal:

Max. - Min.

Max. + Min.

x 100 %

≤ 8 %

(30 - 31.5 KHz)

≤ 7 %

(31.5 - 64 KHz)

≤ 5 %

(64 - 130 KHz)

For any two adjacent blocks

≤ 5 %

(30 - 31.5 KHz)

≤ 4 %

(31.5 - 64 KHz)

≤ 3 %

(64 - 130 KHz)

Vertical :

≤ 5 %

For any two adjacent blocks

≤ 3 %

4.12 Misconvergence

The maximum convergence error should be measured on a white line and represents the maximum distance between the center of the red, green and blue lines over the whole image area.

Max. misconception :

(Picture area 392X294 See Fig. 6)

Zone	31.5Khz	31.6 – 67Khz	> 67Khz
B	≤ 0.50	≤ 0.45	≤ 0.40
A	≤ 0.40	≤ 0.35	≤ 0.30
C	≤ 0.15	≤ 0.15	≤ 0.15

4.13 Focus check

First, adjust brightness to 50 % position and contrast to max., and then generate "" characters for 1024 lines to cover entire picture area (picture size is shown in sect. 4.5). Characters should be clearly identified at the center and all corners. Character size is shown in Fig. 7.

4.14 Brightness uniformity

With an active full area white video input pattern and contrast setting to 100%, no portion of the pattern shall be less than 75 % of the luminance measured at the CRT center.

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4.15 White color adjustment

There are three factory preset white color 9300°K, 6500°K and 5500°K.

Apply full white pattern, with brightness in 50 % position and the contrast control at max. position.

The 1931 CIE Chromaticity (color triangle) diagram (x,y) coordinate for the screen center should be:

9300°K CIE coordinates $X = 0.283 \pm 0.020$
 $Y = 0.297 \pm 0.020$

6500°K CIE coordinates $X = 0.313 \pm 0.020$
 $Y = 0.329 \pm 0.020$

5500°K CIE coordinates $X = 0.332 \pm 0.020$
 $Y = 0.347 \pm 0.020$

4.16 White uniformity

Set the brightness control at center 50 % position, then adjust the contrast control to set the luminance at the center of the screen to 100% max..

The color coordinate at any point on the screen should be :

$X = X(\text{center}) \pm 0.015$

$Y = Y(\text{center}) \pm 0.015$

4.17 Color tracking on full white pattern

Adjust the contrast control from max. to min.(with brightness at click position). The color coordinates should not deviate more than:

$x = x(\text{center}) \pm 0.015$

$y = y(\text{center}) \pm 0.015$

4.18 Purity

Conditions: With full color pattern, with brightness control at 50 % position and contrast control in maximum, under the specific destinations of earth Magnetic environments.

After a warm-up time of 30 min., the purity control can be used to eliminate colored stains if it occurs, the monitor should be well degaussed before Purity adjustment.

Remark: If the external degaussing is used, the degaussing coil should be a stick type, can't use ring type for MITSUBISHI NF CRT.

To set the electrical current of four corner purity coils and N/S coil (if exist) equal to zero, or switch off the monitor before external degaussing.

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4.19 Moire

At 15FL contrast & moire is acceptable if not over 1/3 area..

4.20 Ringing

Apply a full white pattern at 128.5KHz, set horizontal raster symmetrically by raster

shift press the OSD button & select horizontal position shift the image to the left edge of the raster. the yoke ring should less than 20mm.

4.21 Tapping test

No interference does disturb the monitor picture during tapping test with a rubber hammer.

4.22 Distance between two monitors

Two monitors of the same monitor type which were conducted with different Modes or frequencies, don't show any interence in a distance down to 25cm.

5.0 Mechanical characteristics

5.1 Controls

Front side:

- AC power switch
- OSD function key

Rear :

- D- sub / BNC
- Power cord socket

5.2 Unit dimension / Weight

REF. TO SHEET 560

5.3 Tilt and swivel base

REF. TO SHEET 191

5.4 Transportation packages

REF. TO SHEET 560

6.0 Environmental characteristics

The following sections define the interference and susceptibility condition limits that might occur between external environment and the display device.

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SUPERS.

32

590

21

10

A4

TY

CHECK

DATE

02-01-23

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6.1 Susceptibility of display to external environment

Operating

- Temperature : 0 to 35 degree C
- Humidity : 10 to 90% (w/o condensation)
- Altitude : 10,000 ft

Storage

- Temperature : -40 to 60 degree C
- Humidity : 5 to 95% (w/o condensation)
- Altitude : 40,000 ft
- Condensation : should be prevented

6.2 Transportation tests

TEST ITEM	TEST CONDITION	STANDARD REFERENCE
1. PACKAGED TEST :		
1.1 Packaged random vibra. test 4 sets	*5 ~ 200 Hz, 0.73 Grms , *30 min/axis, 3 axes.,	Ref. ASTM D-4169
1.2 Drop test *4 sets after random vibra. Test	Drop Height:45 CM *Sequence:1C-3E-6F , 10 drops,	NSTA height increment one level NSTA
1.3 Cold drop test (Only for reference) 2 sets	*-10 C for 16 hours, recovery time after cold test: +/- 5 minutes *Gross weight drop height: 30 CM *Sequence:1C-3F , 4drops ,	UN-D1400 NSTA
2. UN-PACKAGED VIBRATION TEST :		
2.1 Operating random vibra. test 2 sets	*5~500 Hz, 0.25 Grms, *30 min/axis 3 axes.	Ref.OEM spec.
2.2 Shock test(half sine) 2 sets	a. 100 G , < 3 msec , 6 shocks *G value measurement filter:330Hz #Exclude CRT impurity (Only for reference)	Ref.OEM spec

TOTAL : 10 sets

CLASS NO.

22"AUTO SCAN CMTR-M25P-202P4

TYPE : 202P40/00C

BRAND : PHILIPS

8639 000 11833

02-01-23

NAME C.P CHOU

SUPERS.

32

590

22

10

A4

TY

CHECK

DATE

02-01-23

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6.3 Display disturbances from external environment
According to IEC 801-2 for ESD disturbances

6.4 Display disturbances to external environment

6.4.1 Ionizatic radiation
Completely fulfilled International Commission of
Radiological Protection (ICRP) requirement 0.5 mR/hrs.

7.0 Reliability

7.1 Mean Time Between Failures
MTBF to be calculated according to military standard MIL-HDBK-217C.
MTBF > = 75,000 hrs (excluding CRT)

$$\text{Practice of MTBF} = \frac{\text{Total hrs (power on)} \times \text{Total sets}}{\text{NO. of failed sets}}$$

8.0 Quality assurance requirements

8.1 Acceptance test
according to MIL-STD-105D Control II level

AQL : 0.65 (major)
2.50 (minor)
(please also refer to annual quality agreement)
Customer acceptance criteria : UAW0377/00

9.0 Serviceability
The serviceability of this monitor should fulfill the
requirements which are prescribed in UAW-0346 and must
be checked with the check list UAT-0361.

CLASS NO.

22" AUTO SCAN CMTR-M25P-202P4

TYPE : 202P40/00C
BRAND : PHILIPS

8639 000 11833

02-01-23

NAME C.P CHOU

SUPERS.

32

590

23

10

A4

TY

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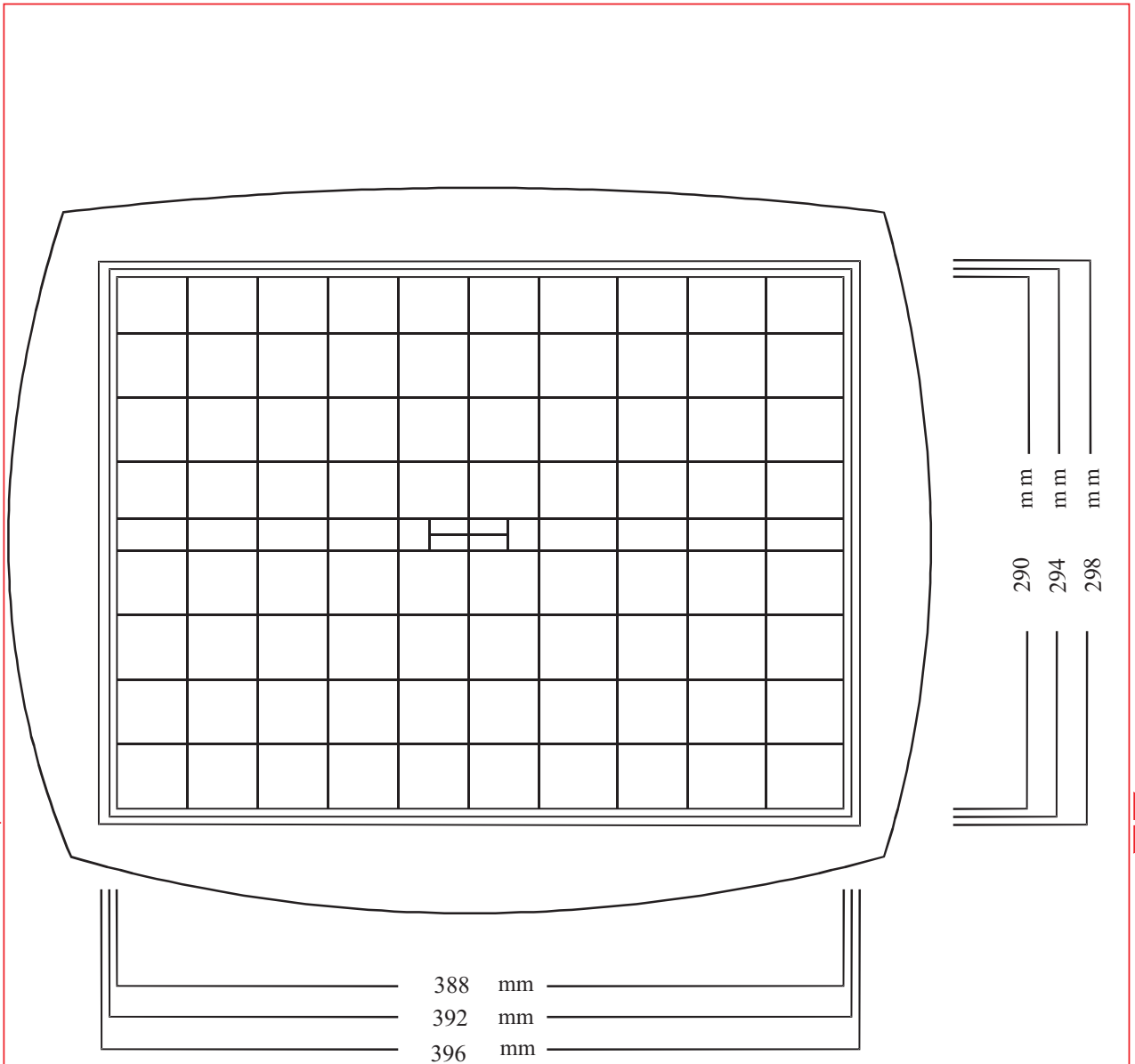


FIG-1 IMAGE DIMENSION

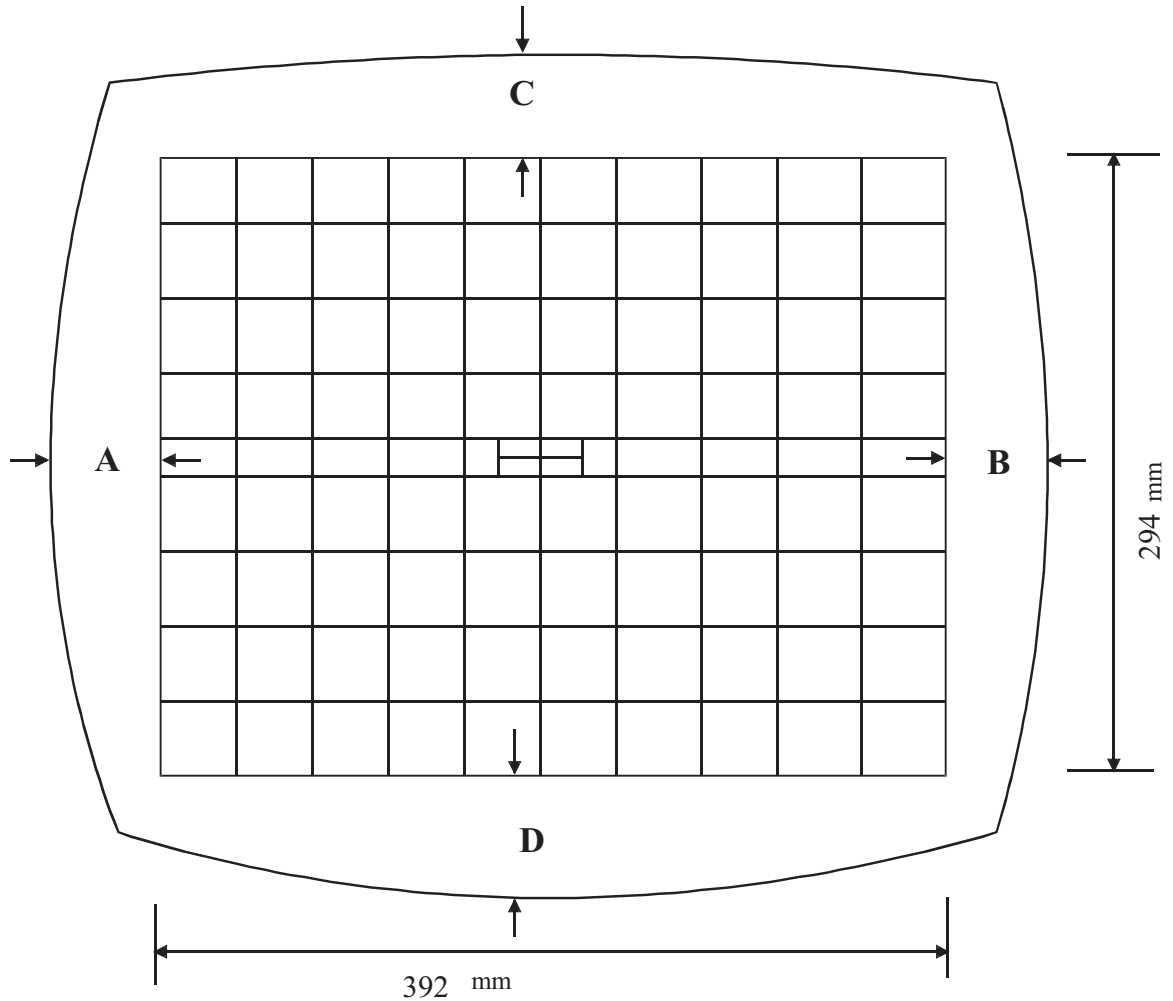
CLASS NO.		22" AUTO SCAN CMTR-M25P-202P4		8639 000 11833	
02-01-23		TYPE : 202P40/00C			
		BRAND : PHILIPS			
NAME	C.P CHOU	SUPERS.	32	590	24
TY	CHECK	DATE	02-01-23	10	A4
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$$|A-B| \text{ AND } |C-D| < 6 \text{ mm}$$

FIG-2 IMAGE CENTERING

CLASS NO.		22" AUTO SCAN CMTR-M25P-202P4			
02-01-23		TYPE : 202P40/00C		8639 000 11833	
		BRAND : PHILIPS			
NAME	C.P CHOU	SUPERS.	32	590	25
TY	CHECK	DATE	02-01-23	10	A4
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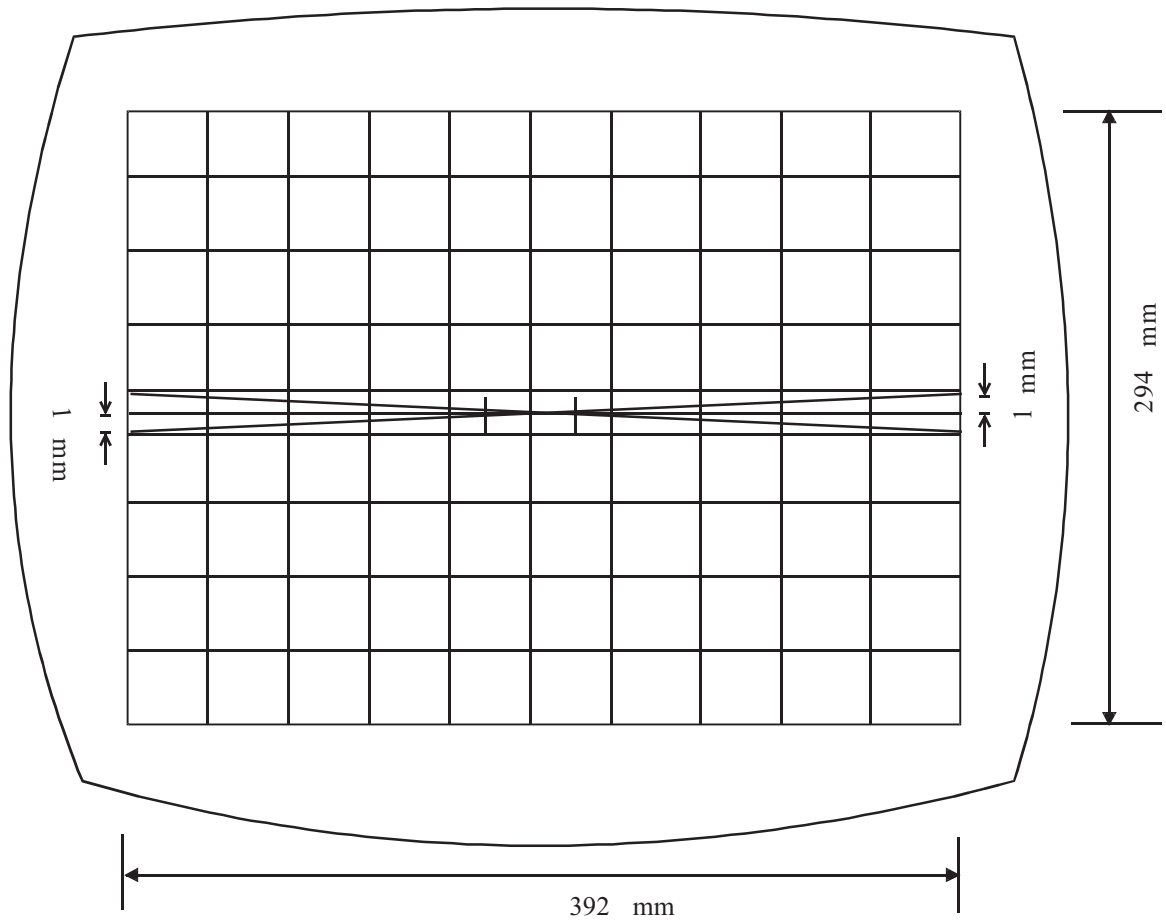


FIG-3 IMAGE ROTATION

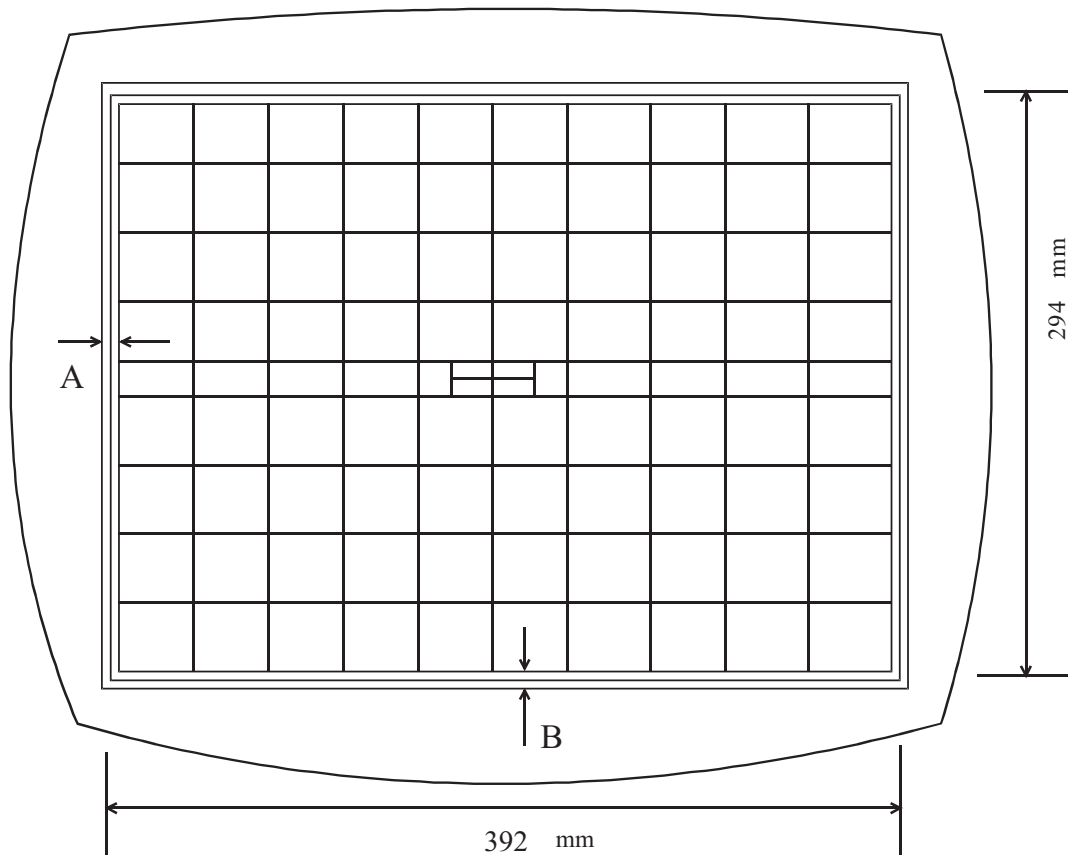
CLASS NO.		22" AUTO SCAN CMTR-M25P-202P4			
02-01-23		TYPE : 202P40/00C		8639 000 11833	
		BRAND : PHILIPS			
NAME	C.P CHOU	SUPERS.	32	590	26
TY		CHECK	DATE 02-01-23	10	A4
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$$A = B = 2.5 \text{ mm}$$

FIG-4 IMAGE GEOMETRY

CLASS NO.		22" AUTO SCAN CMTR-M25P-202P4			
02-01-23		TYPE : 202P40/00C		8639 000 11833	
		BRAND : PHILIPS			
NAME	C.P CHOU	SUPERS.	32	590	27
TY		CHECK	DATE 02-01-23	10	A4
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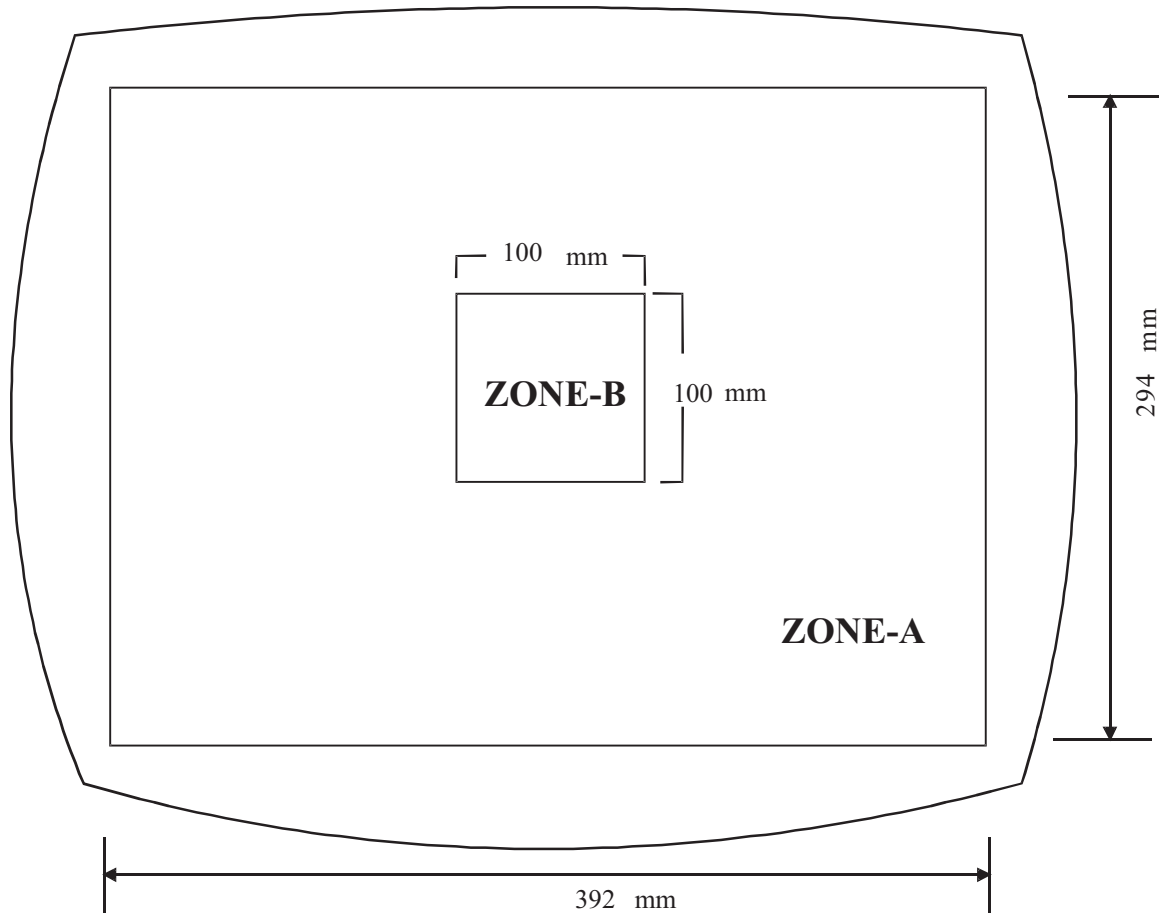


FIG-5 BRIGHTNESS AND CONTRAST MEASUREMENT AREA

CLASS NO.		22" AUTO SCAN CMTR-M25P-202P4			
02-01-23		TYPE : 202P40/00C		8639 000 11833	
		BRAND : PHILIPS			
NAME	C.P CHOU	SUPERS.	32	590	28
TY		CHECK	DATE 02-01-23	10	A4
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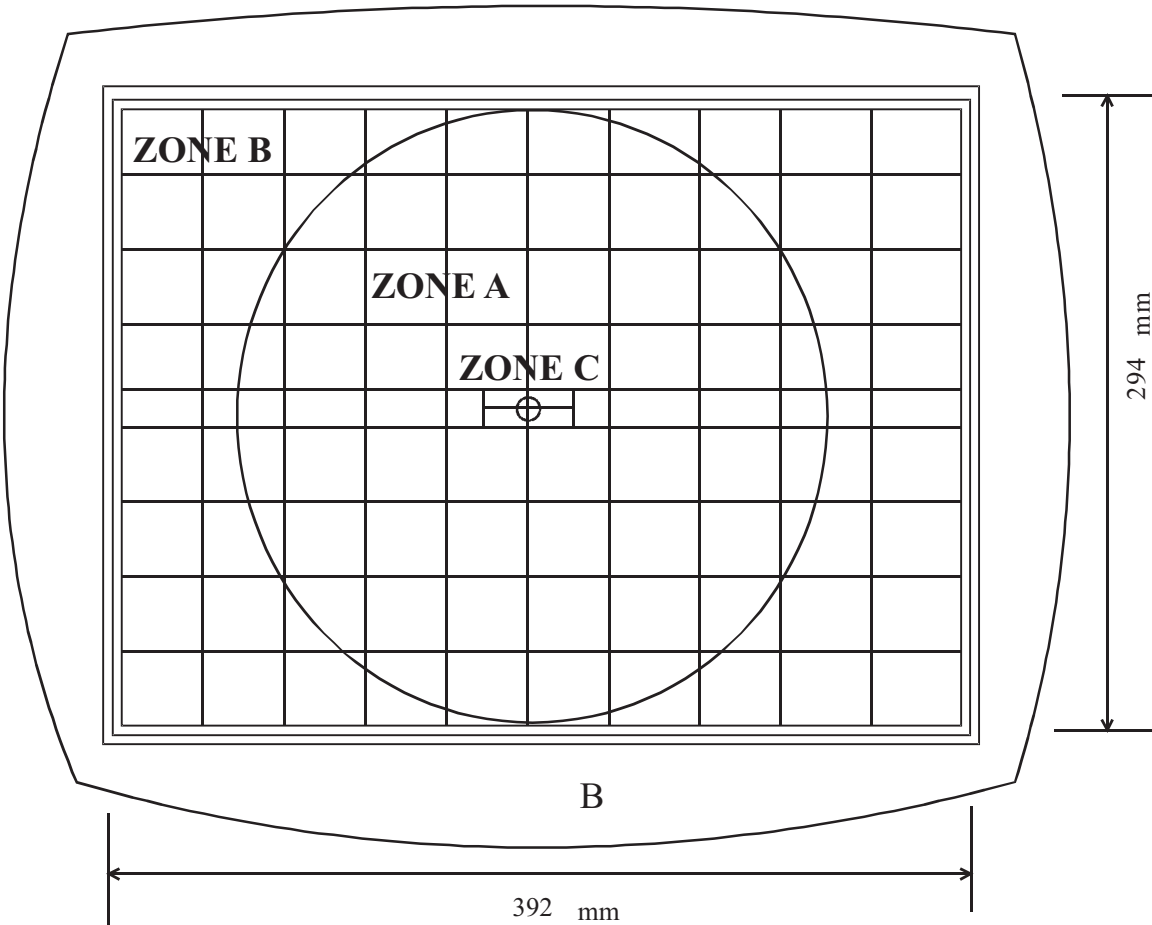


FIG-6 MISCONVERGENCE

CLASS NO.		22"AUTO SCAN CMTR-M25P-202P4		8639 000 11833	
02-01-23		TYPE : 202P40/00C BRAND : PHILIPS			
NAME C.P CHOU		SUPERS.		32	
TY		CHECK		590 — 29	
DATE 02-01-23		Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.		10 A4	

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1 BYTE = 8BITS

LINE	HEX.DATA		7	6	5	4	3	2	1	0
0	0	0								
1	0	0								
2	3	C								
3	4	2								
4	4	2								
5	5	E								
6	5	2								
7	5	2								
8	5	C								
9	4	0								
A	3	C								
B	0	0								
C	0	0								
D	0	0								
E	0	0								
F	0	0								

Fig 7 CHARACTER FORMAT FOR FOCUS CHECK

CLASS NO.		22"AUTO SCAN CMTR-M25P-202P4			
02-01-23		TYPE : 202P40/00C		8639 000 11833	
		BRAND : PHILIPS			
NAME	C.P CHOU	SUPERS.	32	590	30
TY		CHECK	DATE 02-01-23	10	A4
Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.					

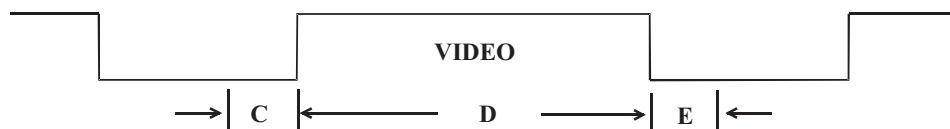
[◀◀ Go to cover page](#)

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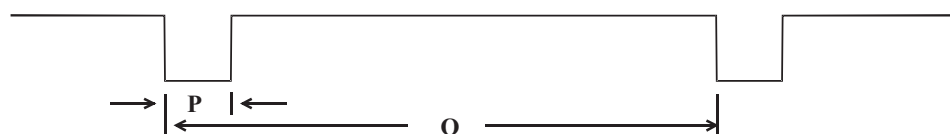
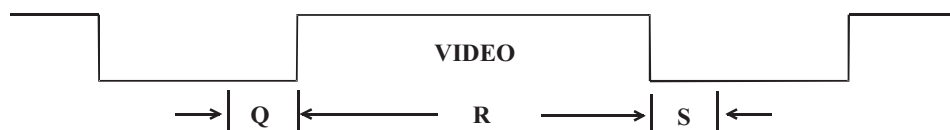
SEPARATE SYNC.



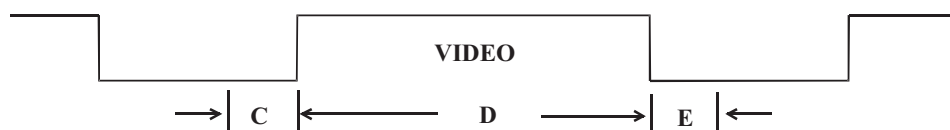
HORIZONTAL



VERTICAL



COMPOSITE SYNC.



HORIZONTAL



FIG-8 TIMING CHART -1

CLASS NO.

22" AUTO SCAN CMTR-M25P-202P4

TYPE : 202P40/00C

BRAND : PHILIPS

8639 000 11833

02-01-23

NAME C.P CHOU

SUPERS.

32

590

31

10

A4

TY

CHECK

DATE

02-01-23

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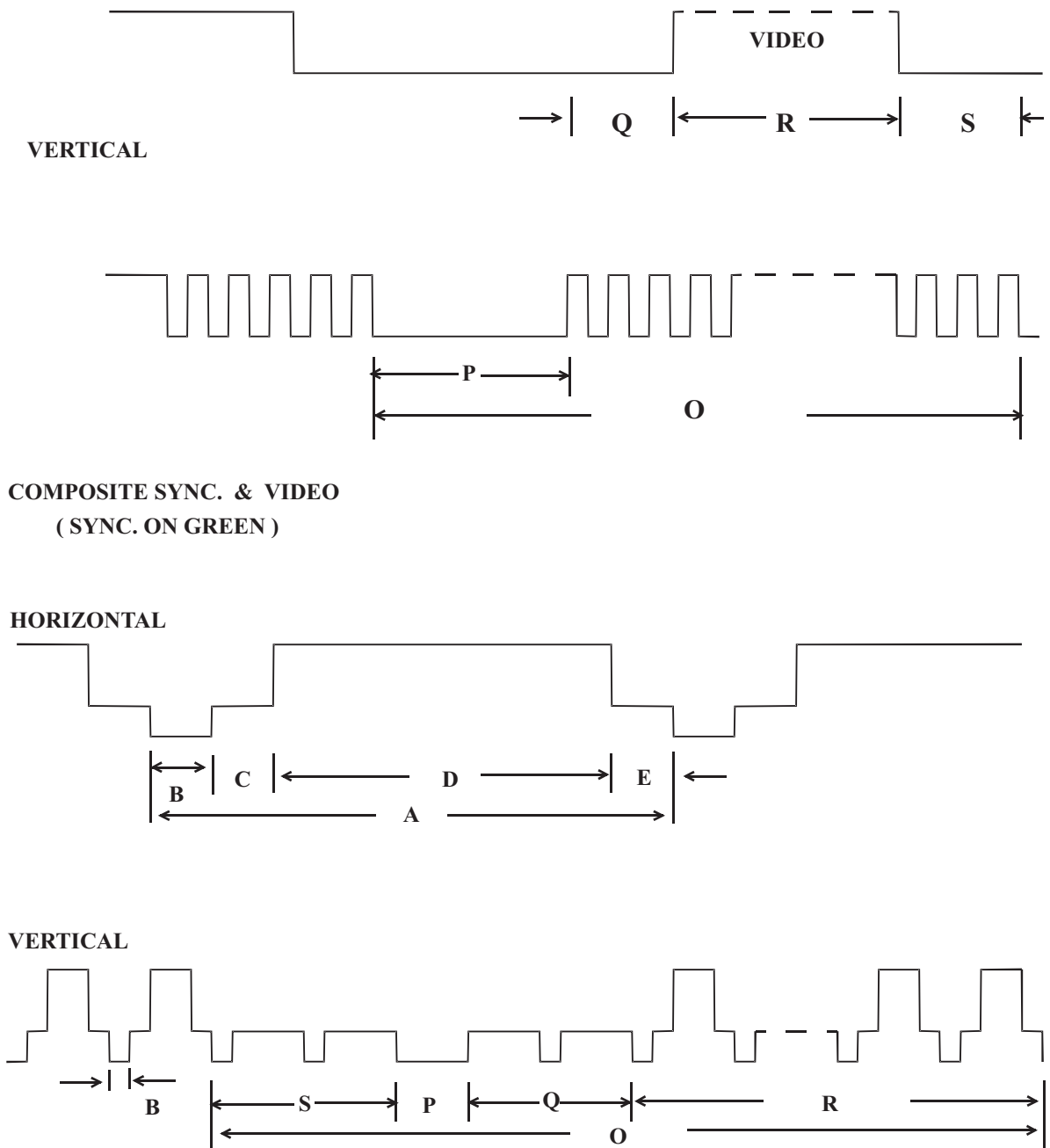


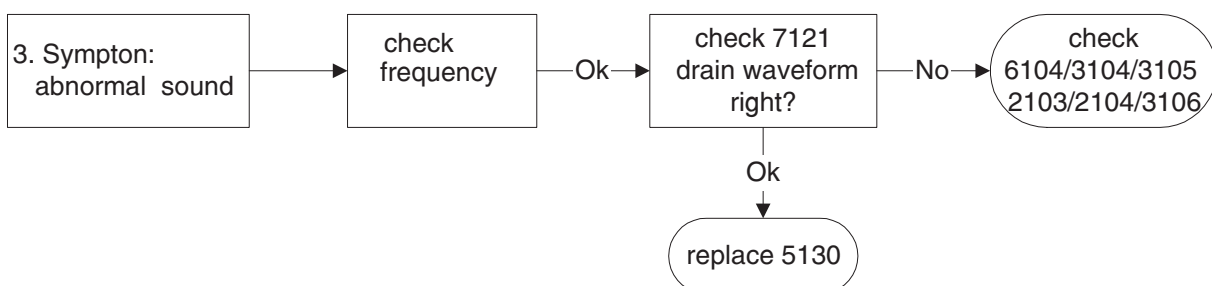
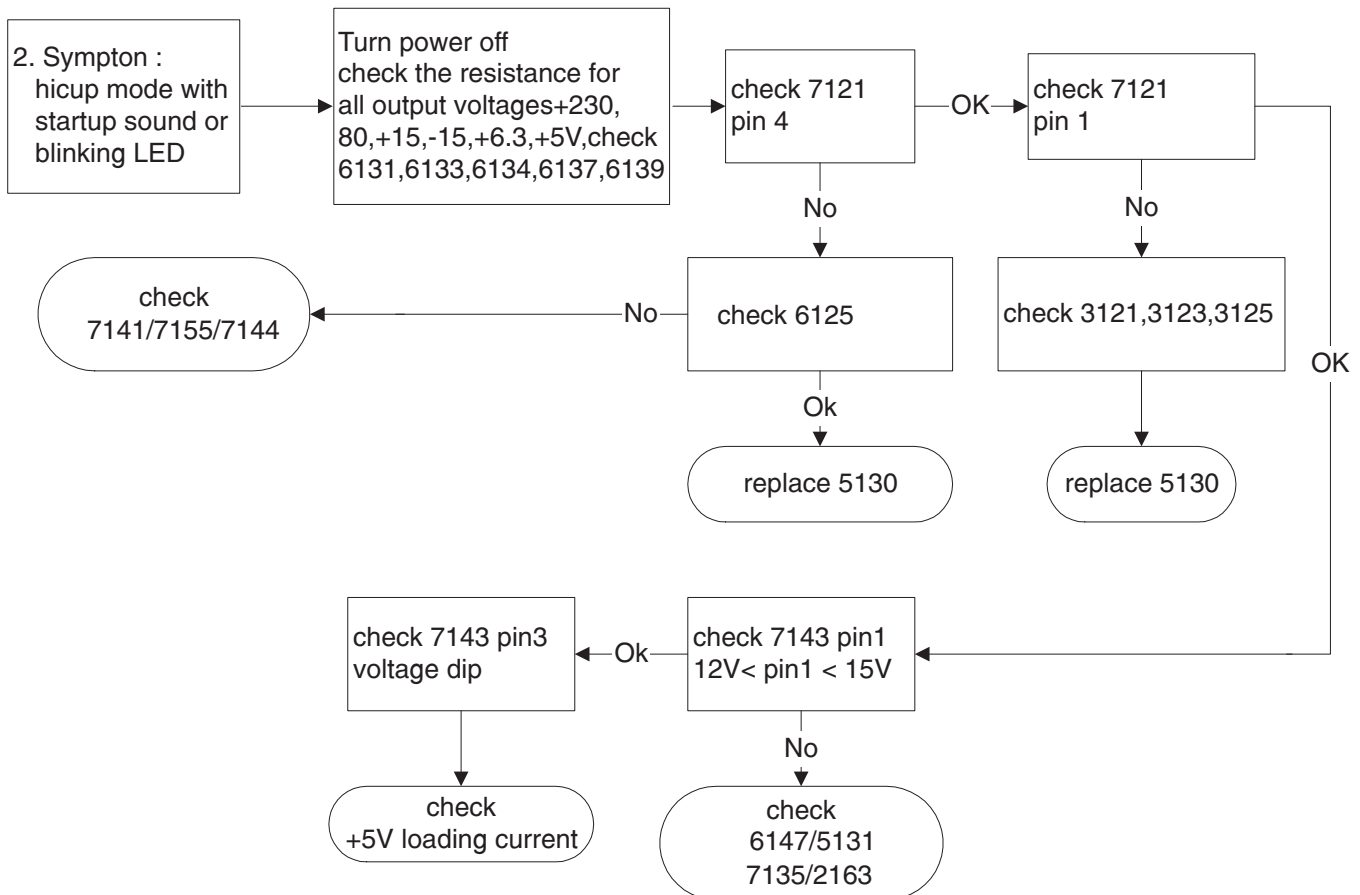
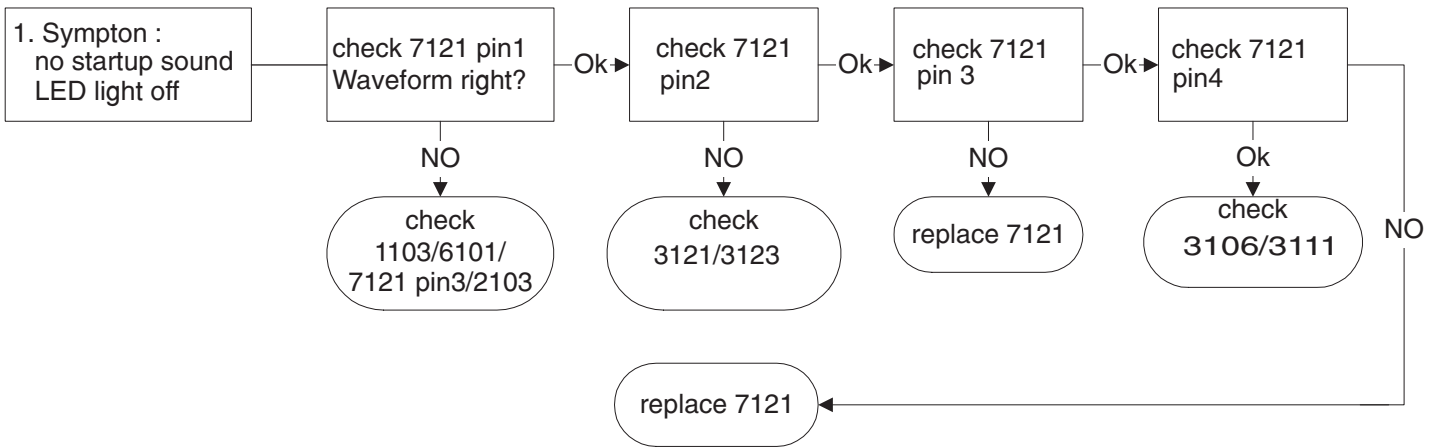
FIG-9 TIMING CHART -2

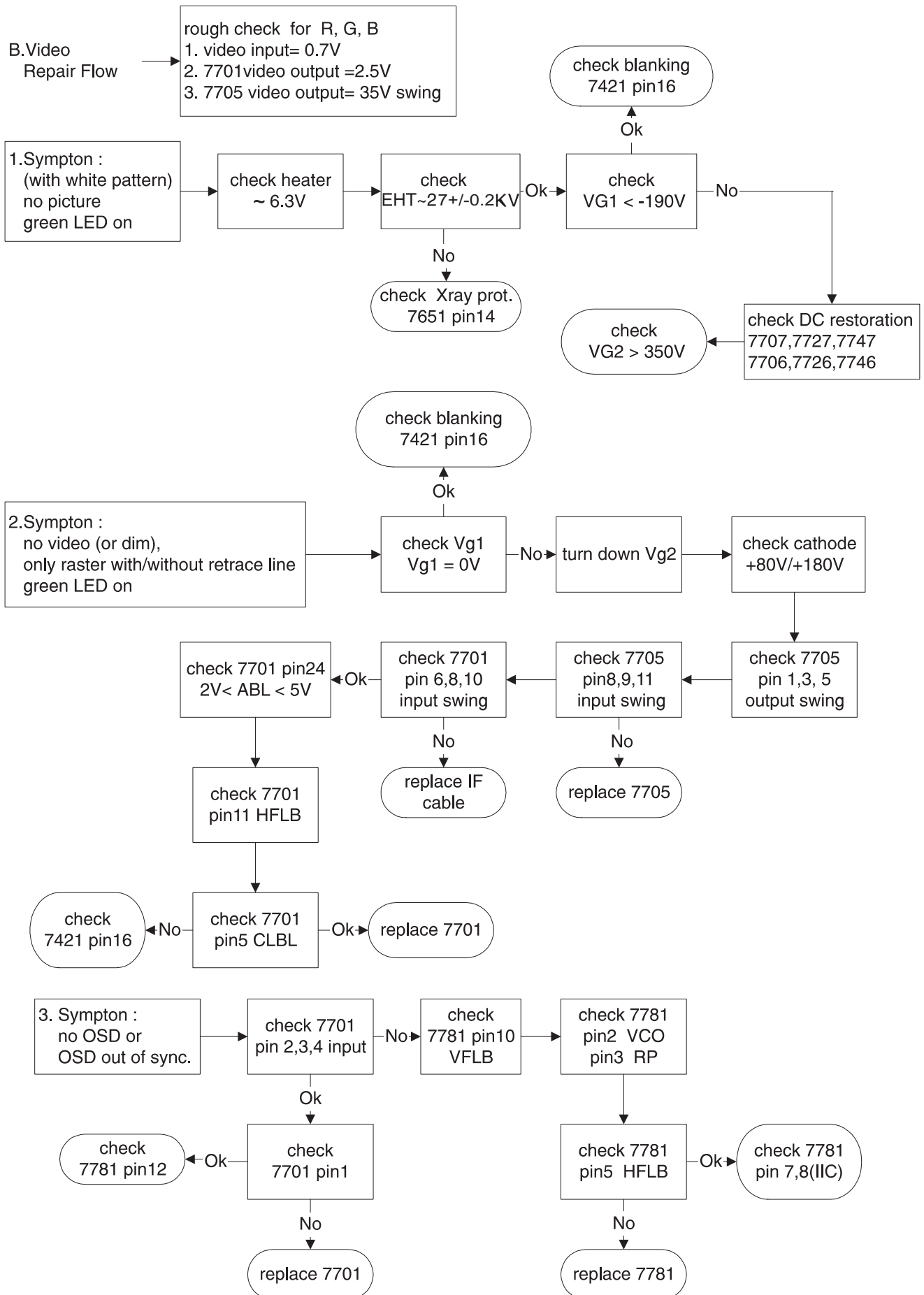
CLASS NO.		22" AUTO SCAN CMTR-M25P-202P4		8639 000 11833	
02-01-23		TYPE : 202P40/00C			
		BRAND : PHILIPS			
NAME	C.P CHOU	SUPERS.	32	590	32
TY		CHECK	DATE	02-01-23	10
		Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.		A4	

Repair Flow Chart

Go to cover page

A. Power Supply Failure



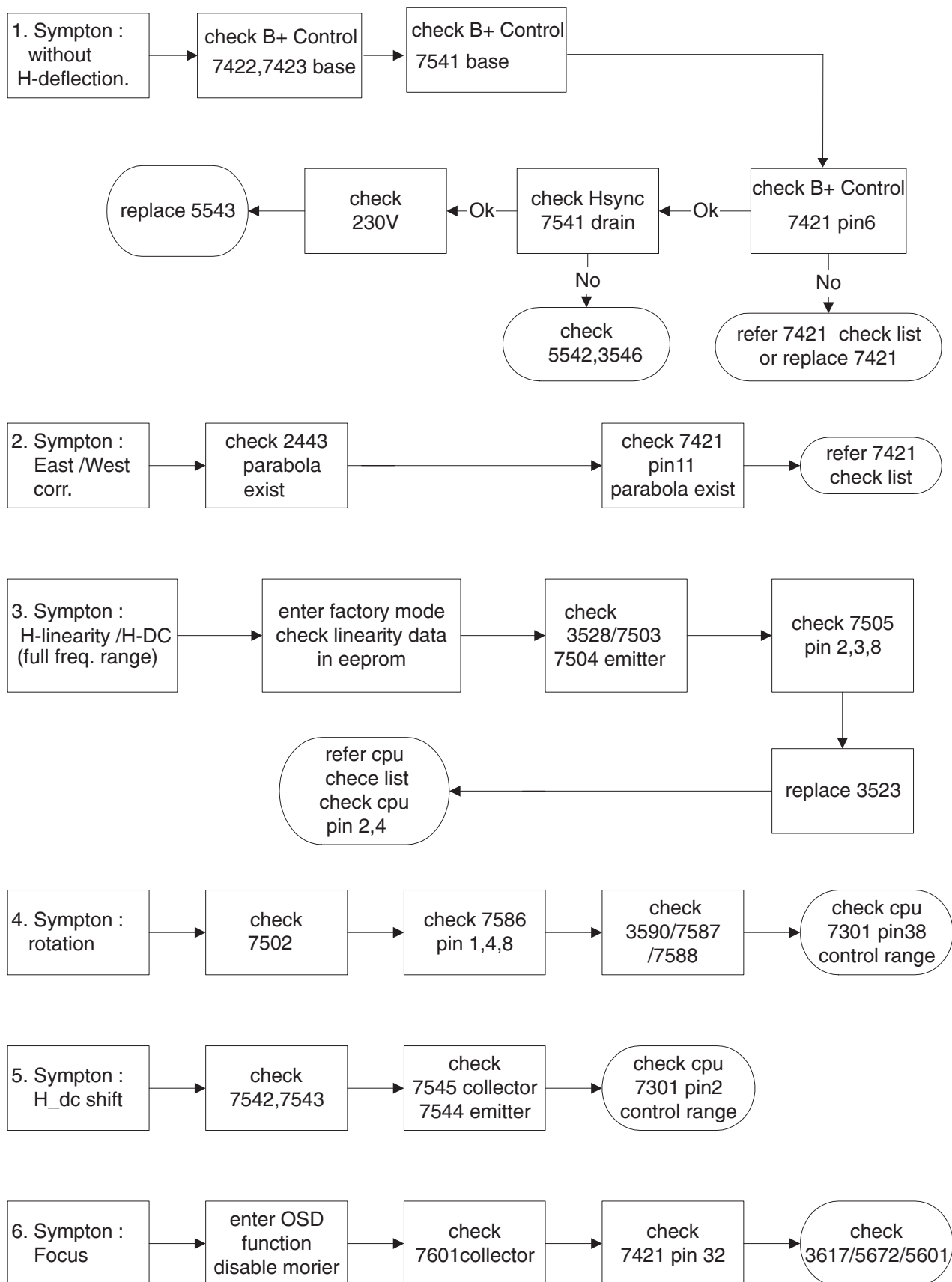


Repair Flow Chart

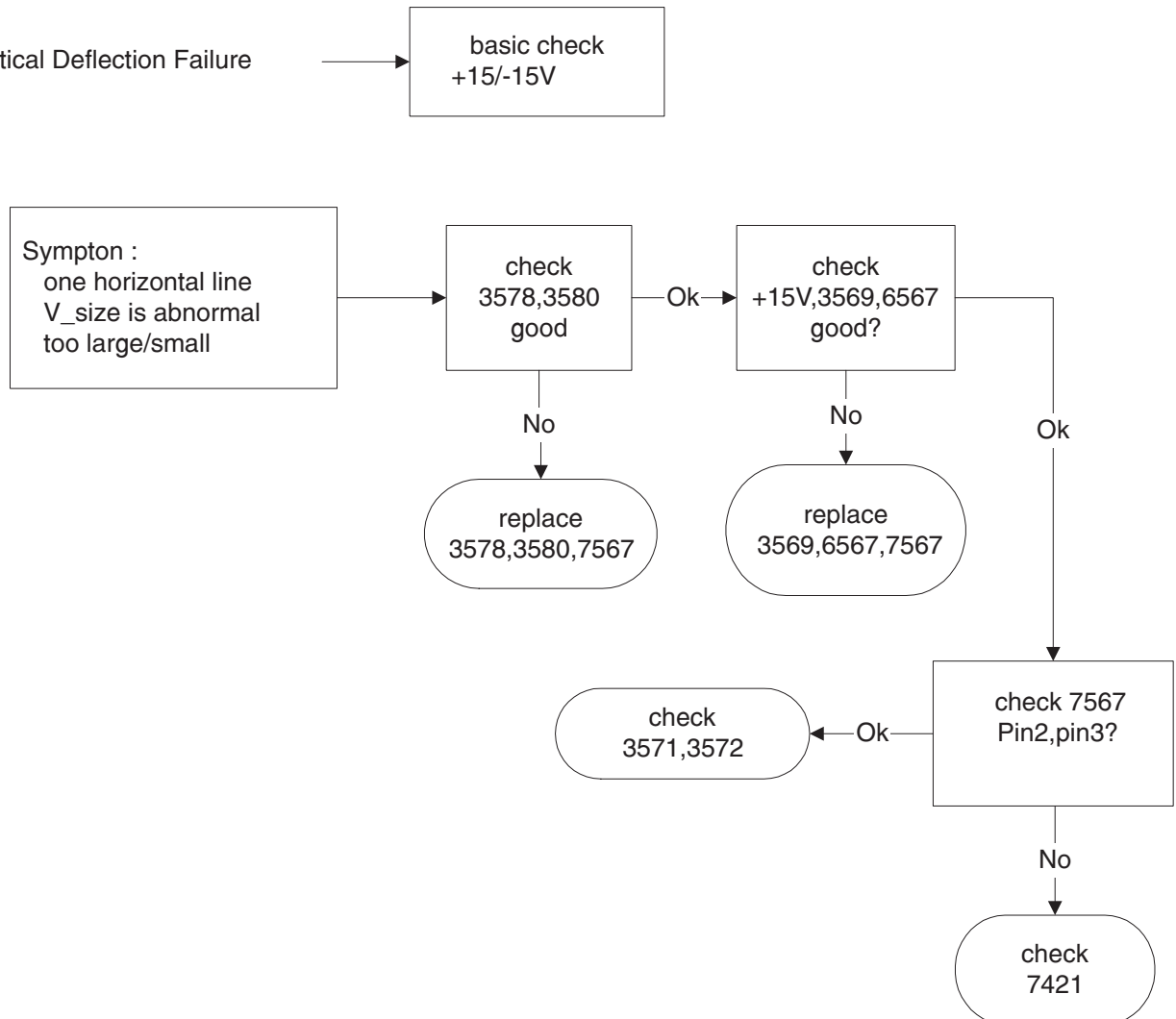
◀◀ Go to cover page

C. Horizontal deflection

output repair flow :



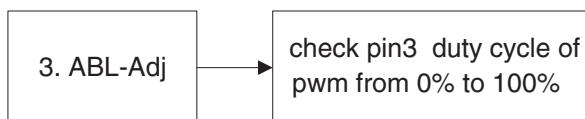
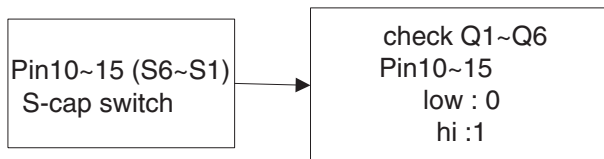
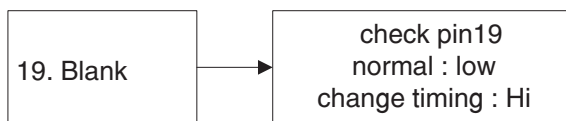
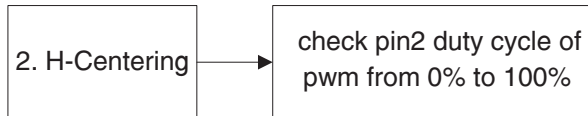
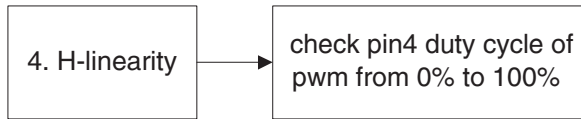
D. Vertical Deflection Failure



Repair Flow Chart

◀◀ Go to cover page

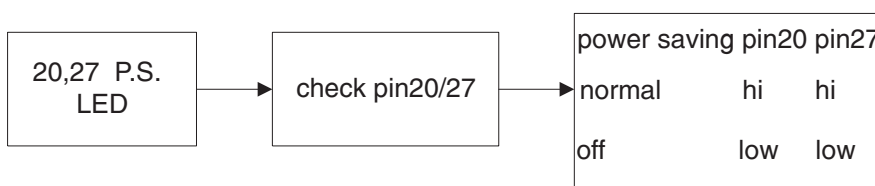
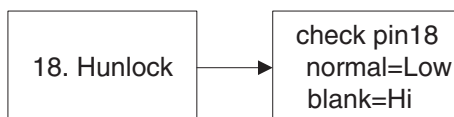
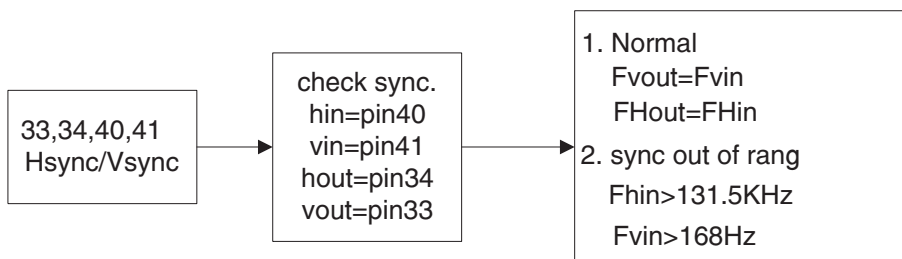
E. CPU
check list

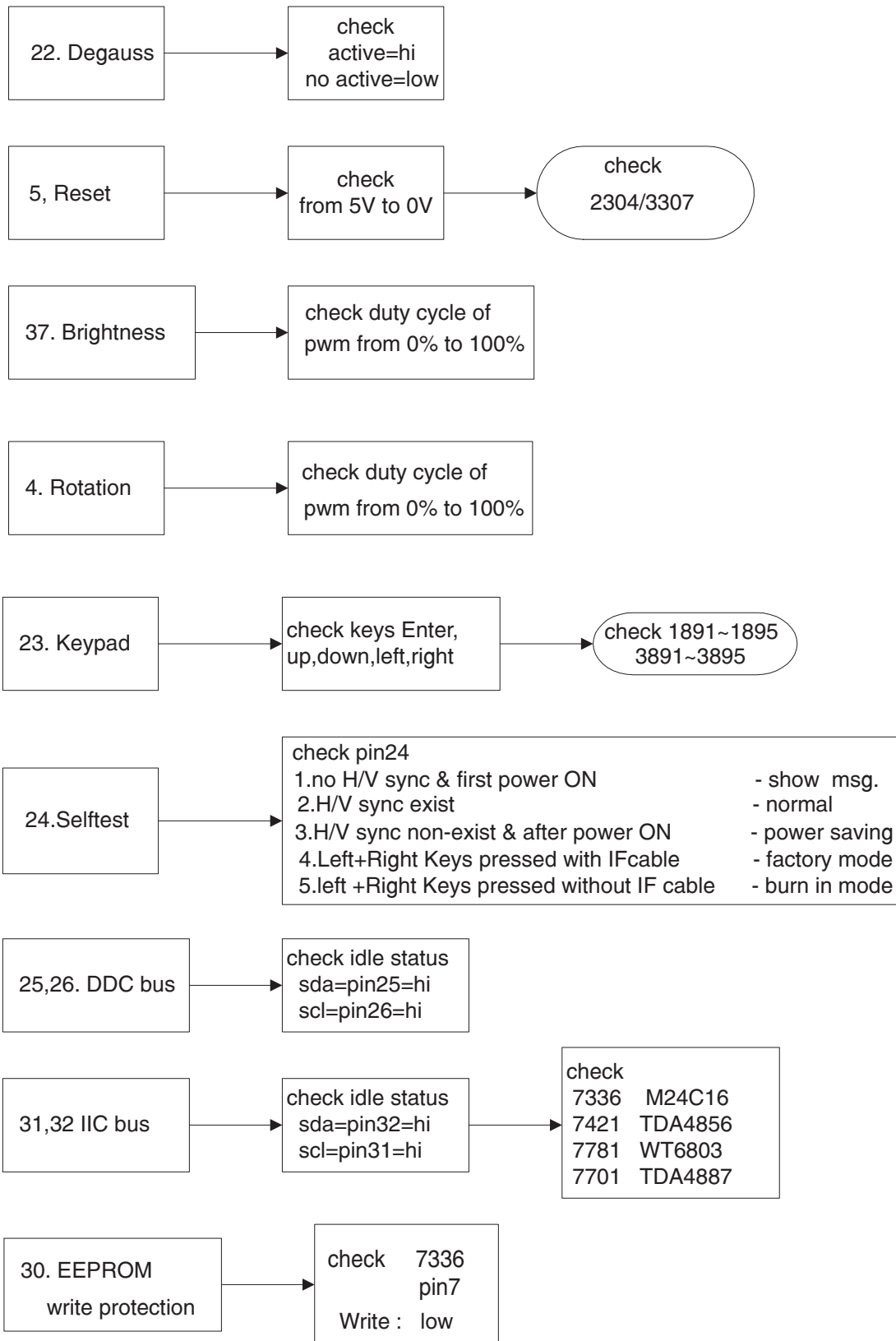


202P130K S-CAPACITOR SWITCH TABLE

Hor. Freq.(KHz)	Q7	Q6	Q5	Q4	Q3	Q2	Q1
~33.00	1	1	1	1	1	1	1
33.00~36.00	0	1	1	1	1	0	1
36.00~42.00	1	0	1	1	0	0	1
42.00~45.00	1	0	1	1	1	1	0
45.00~47.50	0	1	0	0	1	1	0
47.50~49.00	0	1	1	1	0	1	0
49.00~52.00	0	0	0	1	0	1	0
52.00~55.00	1	0	1	0	0	1	0
55.00~58.50	0	1	0	0	0	1	0
58.50~61.50	1	1	0	1	1	0	0
61.50~65.00	1	1	1	0	1	0	0
65.00~70.00	0	0	1	0	1	0	0
70.00~73.00	1	0	0	0	1	0	0
73.00~76.00	0	1	1	1	0	0	0
76.00~80.60	1	0	1	1	0	0	0
80.60~82.50	1	1	0	1	0	0	0
82.50~84.80	0	1	0	1	0	0	0
84.50~88.50	1	0	0	1	0	0	0
88.50~92.50	0	0	0	1	0	0	0
92.50~98.00	1	1	1	0	0	0	0
98.00~102.00	0	1	1	0	0	0	0
102.00~110.00	1	0	1	0	0	0	0
110.00~113.50	1	1	0	0	0	0	0
113.50~122.00	0	1	0	0	0	0	0
122.00~126.50	1	0	0	0	0	0	0
126.50~	0	0	0	0	0	0	0

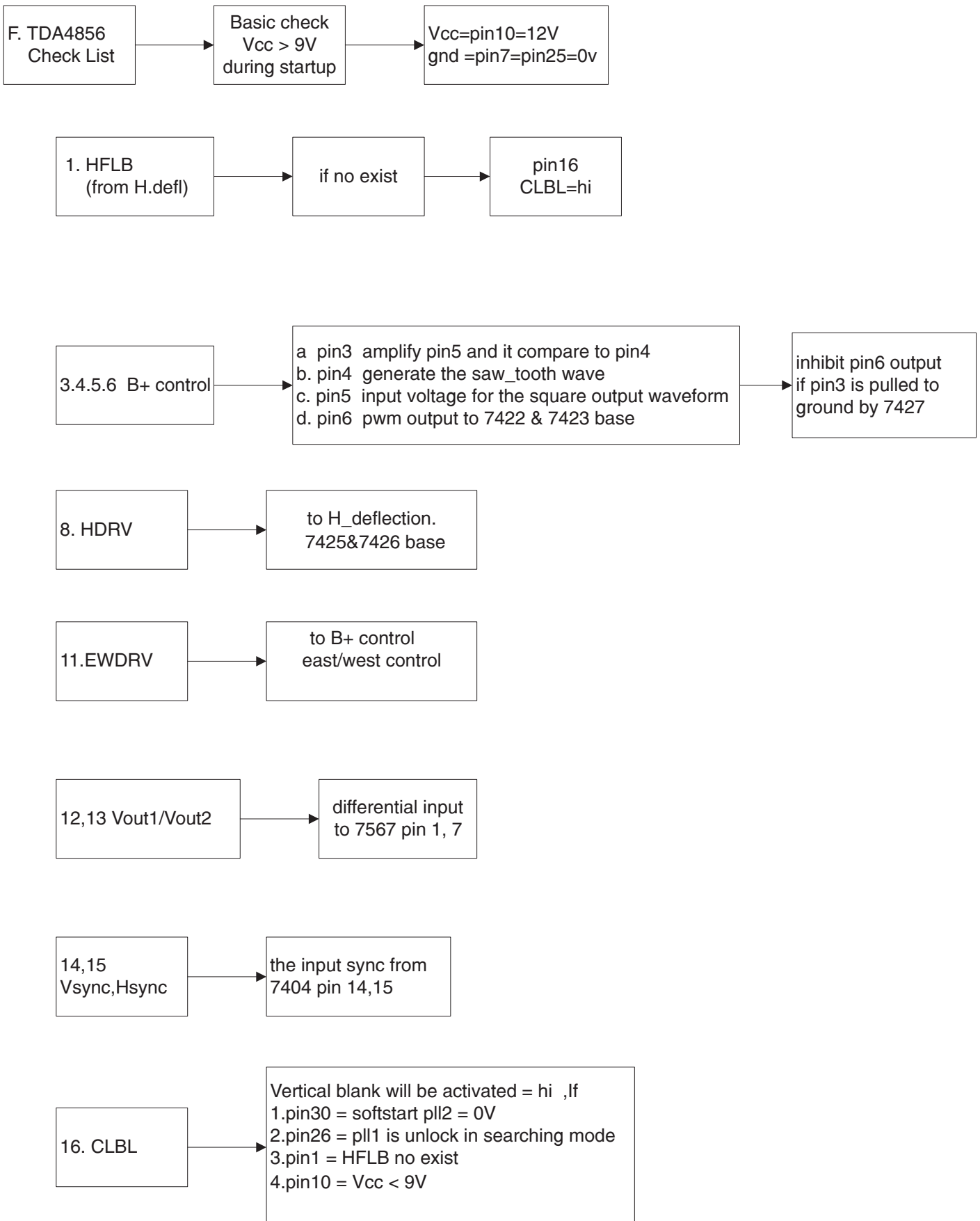
note: bit0→Q1,bit1→Q2,bit2→Q3,bit3→Q4,bit4→Q5, bit5→Q6, bit6→Q7
Q1:Scapacitor1, Q2:Scapacitor2, Q3:Scapacitor3, Q4:Scapacitor4, Q5:Scapacitor5,
Q6:Scapacitor6, Q7:Scapacitor7

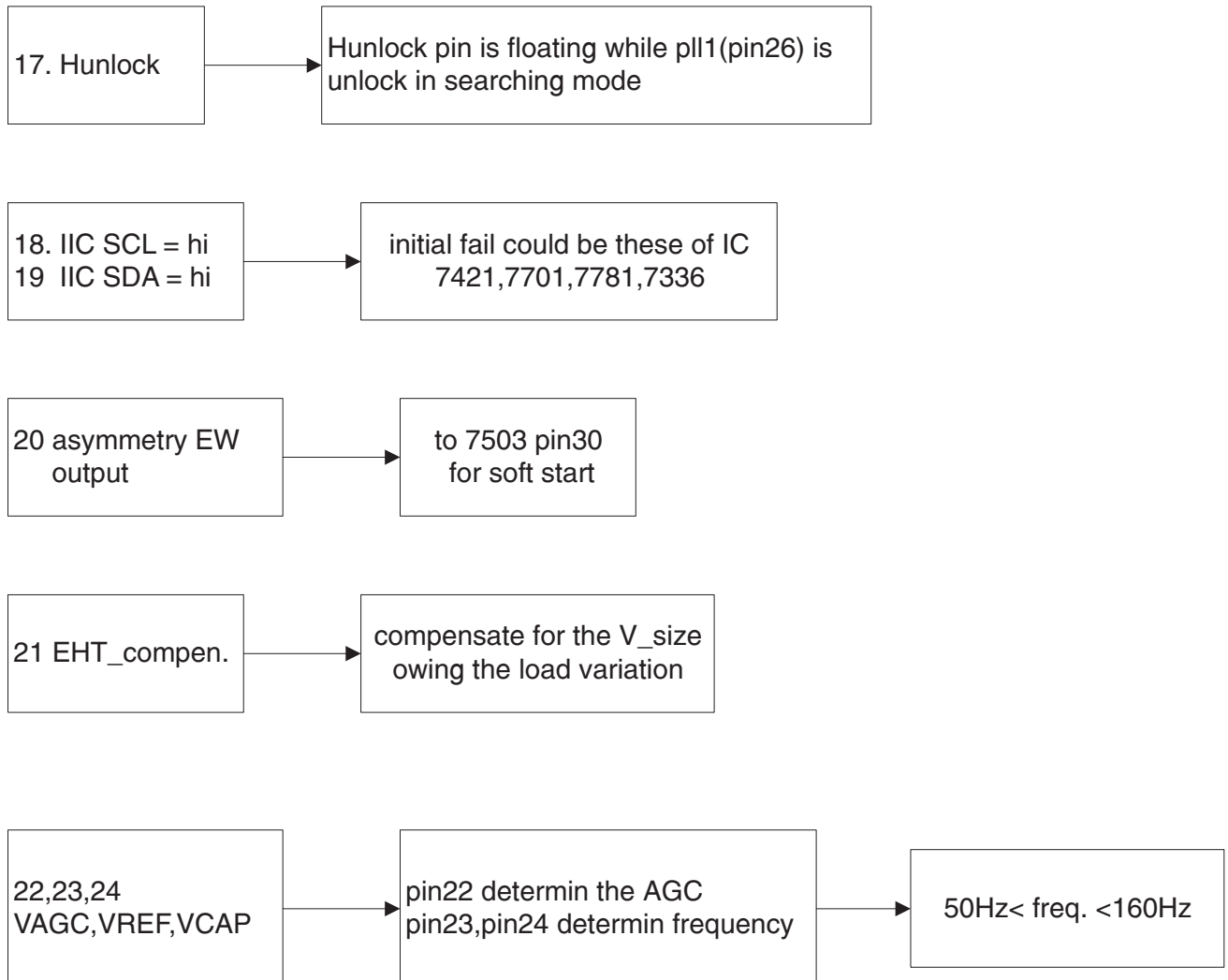




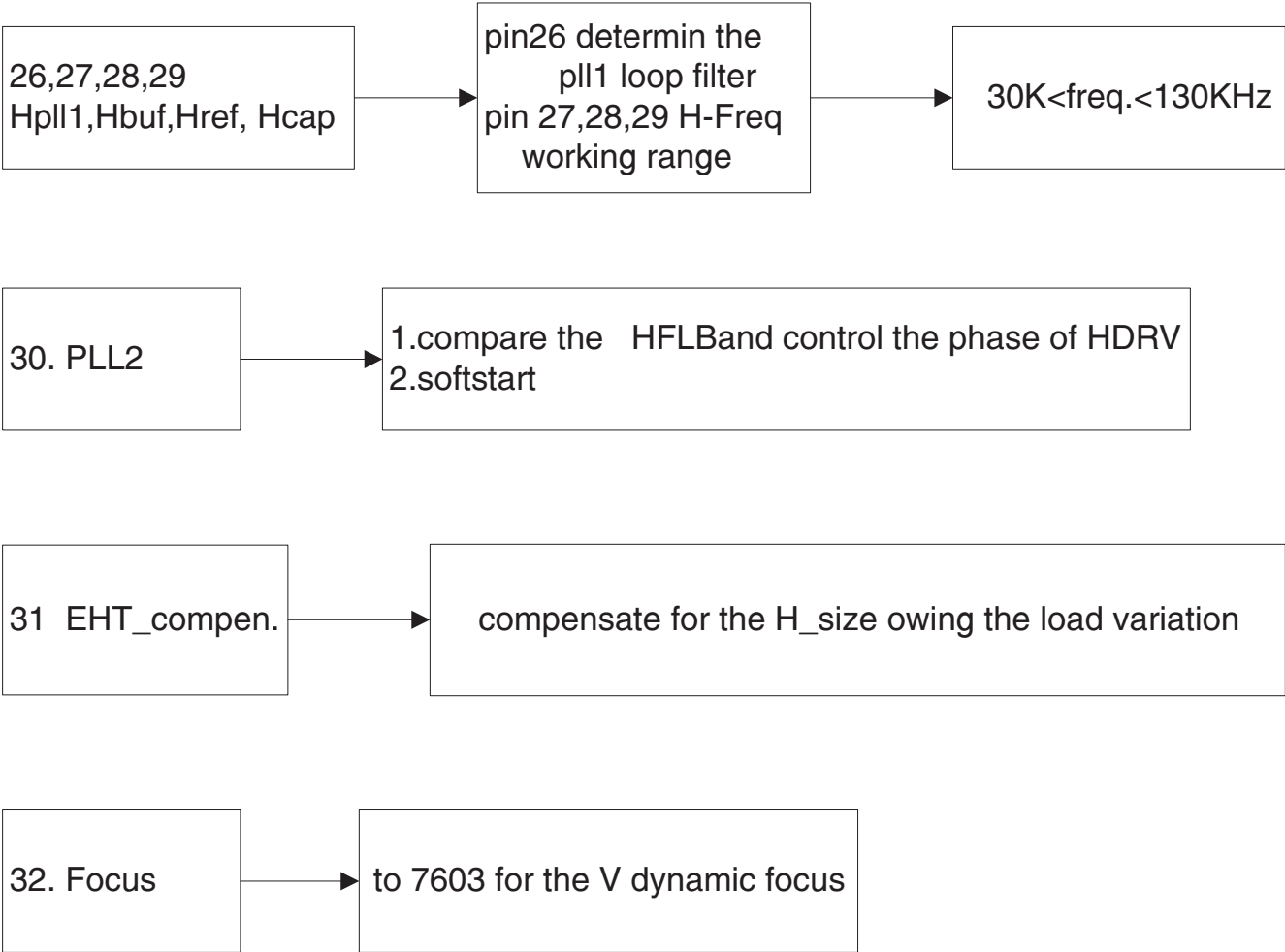
Repair Flow Chart

◀◀ Go to cover page

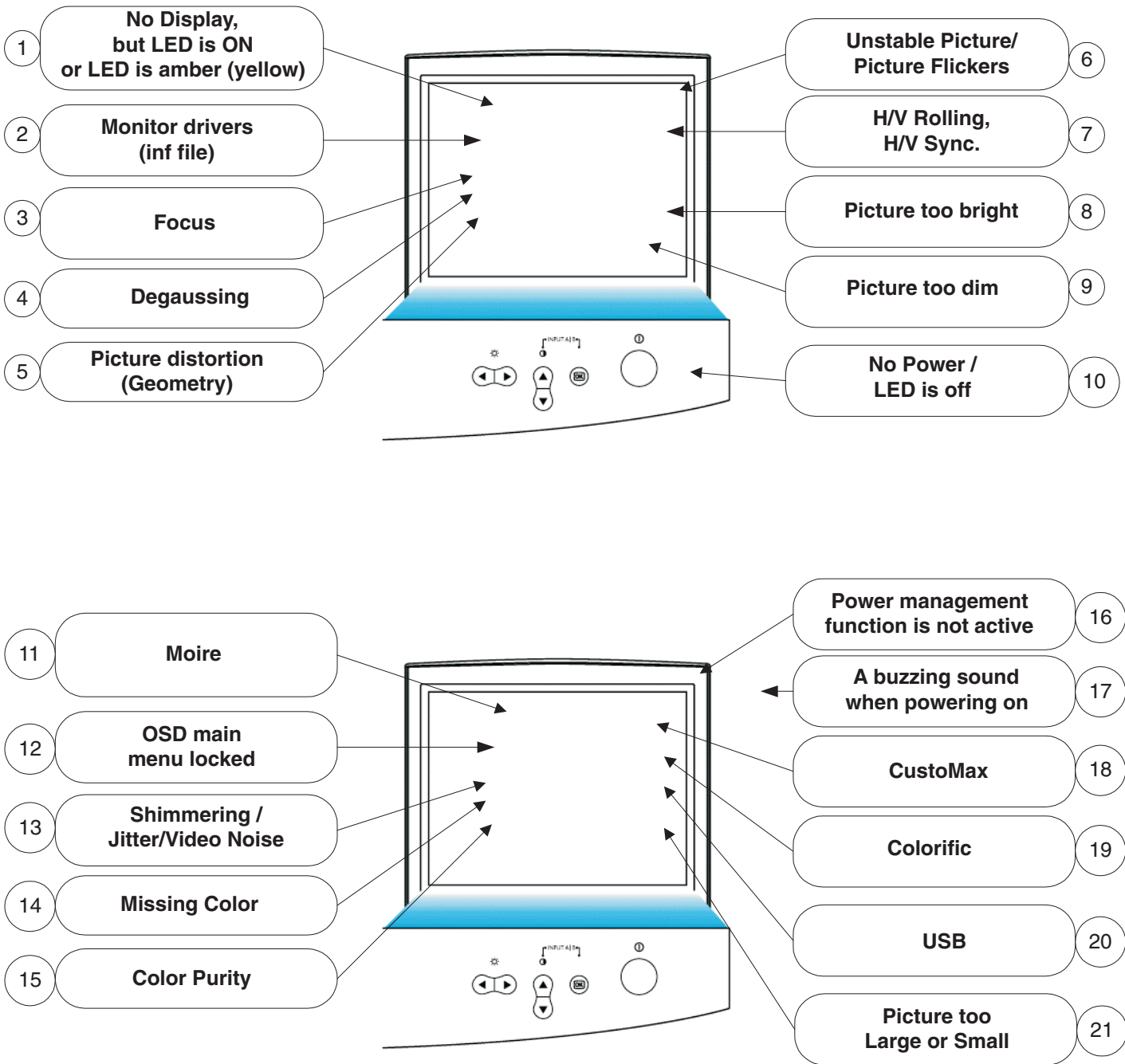




Repair Flow Chart



General Troubleshooting Guide



Note : Not all described feature are applicable for all monitors.

1

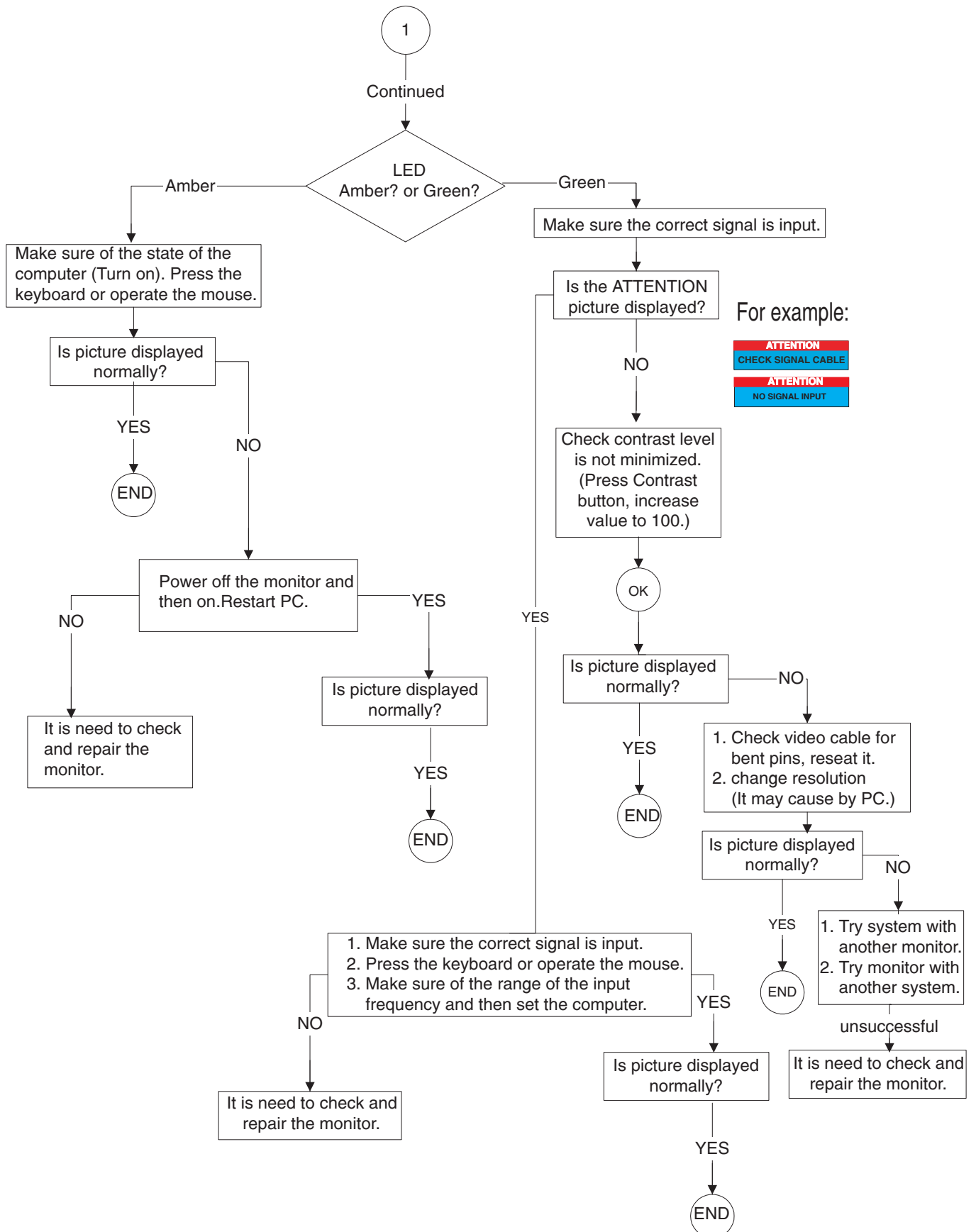
NO DISPLAY,
but LED is ON
or LED is amber(yellow)

Checkpoint:

1. No Macintosh adaptor attached to the plug of signal cable if using the IBM PC
2. A symptom of no color on models equipped with the Plug & Plug feature (DDC) may be seen when these monitors are connected to a NON-DDC Host or Computer. Order a DDC Eliminator Adaptor, P/N 4822 263 50248 from our Customer Care Center.
3. Try to swap the selection of "BNC /Dsub" signal selector in the rear of monitor, if it has.
4. Try to swap the selection of "SOG/TTL"sync selector in the rear of monitor, if it has.
5. Keep pressing the OSD menu for a few seconds to expect a OSD control menu come out to select the "SOG / TTL sync"
6. Remove your USB cable from computer. Reboot computer in safe Mode or DOS mode
7. Disable the DDC 1/2B feature via OSD menu manipulation.
8. Click your mouse or type some word with your keyboard to wake up computer from saving status.
9. Check that your video cable is plugged in and does not have bent pins.

LED
Amber? or
Green?

Continued



General Troubleshooting Guide

◀◀ Go to cover page

2

Monitor drivers (inf file)

for Windows 95/98/2000/Me or later

Philips' monitors build in VESA DDC2B feature to support Plug & Play requirement for Windows 95/98/2000/Me . You can install the information file (.inf) in order to select your Philips monitor from "Monitor" dialog box in Windows 95/98/2000/Me to activate Plug & Play application. The installation procedure based on Windows '95 OEM Release 2 , 98 , Me and 2000 is specified as follows, (In case of connecting the monitor to the PC compliant with VESA standard with the designated signal cable, the PC reads display pixels, frequency, and color feature of this monitor to optimise the picture for the monitor automatically.)
DDC : Abbreviation for Display Data Channel

**** Windows NT 4.0 does not inquire driver (inf file) for monitors.****

For Windows 98

But for Windows98 drivers, our monitors are listed under 2 manufactures name "Philips", "Philips Consumer Electronics Co". Please select "Philips" when you would like to set up your monitor in Windows setting , unless you can not find the right model name just as the label indication on the back of set. For those set that have been issued since the release of Win98 , drivers can be found in CDROM under the directory path of "\pc\ driver \" or it may be downloaded at "http: \www.philips.com". Once you have installed the new driver , Windows will add a new manufacture name "Philips Business Electronics" in your system.

For Windows Me

For Windows 2000

For Windows 95

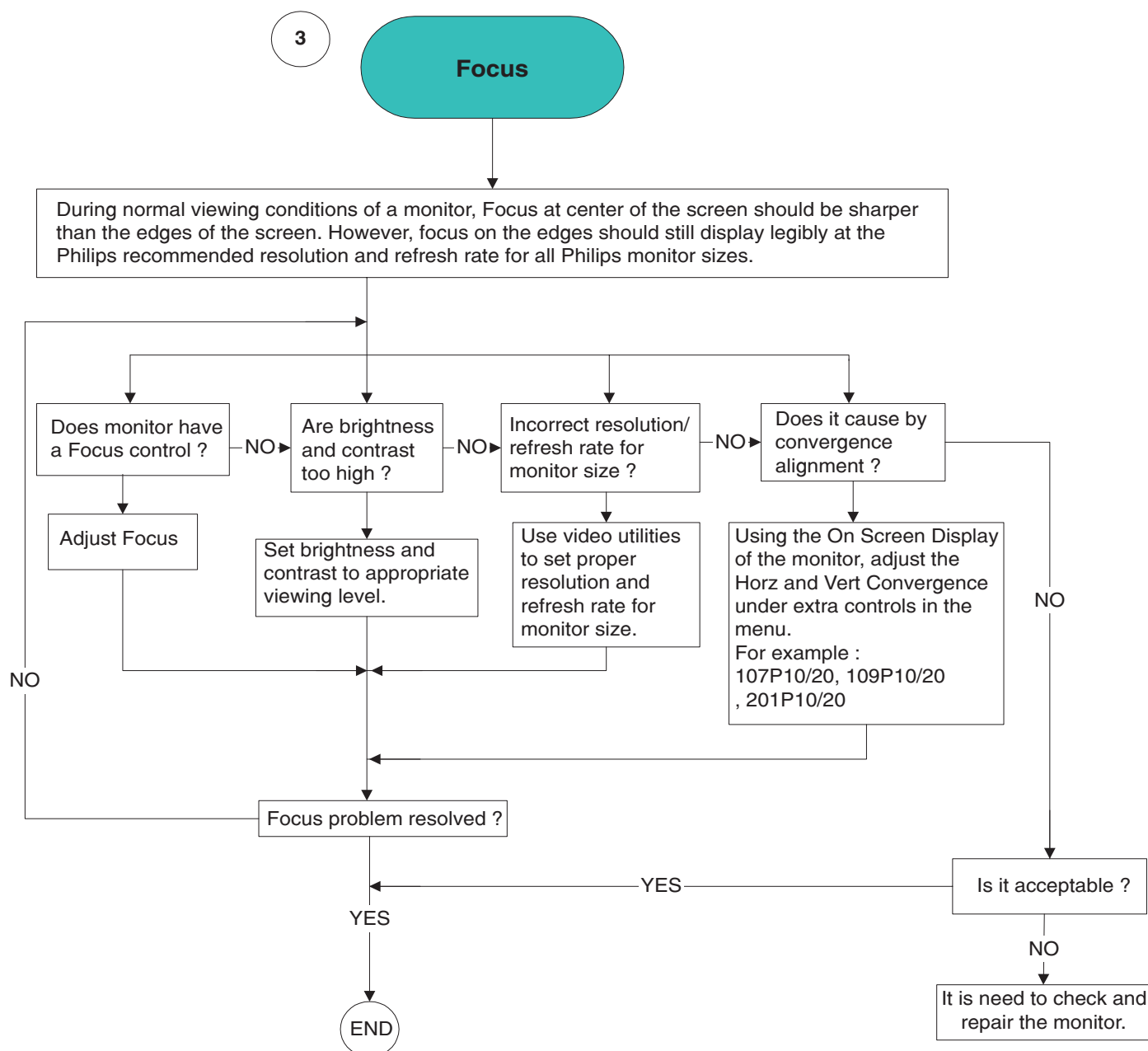
For Windows95 drivers , our monitor is listed 1 manufacture name "Philips Business Electronics Co.".

1. Start Windows '95
2. Click the 'Start' button, point to 'Setting', and then click 'Control Panel'.
3. Double Click the 'Display' Icon.
4. Choose the 'Settings' tab then click 'Advanced...'
5. Choose 'Monitor' button, point to 'Change...' then click 'Have Disk...'
6. Click 'Browse...' button then choose the appropriate drive F: (CD-ROM Drive) then click 'OK' button.
7. Click the 'OK' button then choose your monitor model and click the 'OK'.
8. Click 'Close' button.

1. Start Windows 98
2. Click the 'Start' button, point to 'Setting', and then click 'Control Panel'.
3. Double Click the 'Display' Icon.
4. Choose the 'Settings' tab then click 'Advanced...'
5. Choose 'Monitor' button, point to 'Change...' then click 'Next'
6. Choose "Display a list of all the drivers in a specific location, so you can elect the driver you want." then click 'Next' and then click 'Have Disk...'
7. Click 'Browse...' button then choose the appropriate drive F: (CD-ROM Drive) then click 'OK' button.
8. Click the 'OK' button then choose your monitor model and click the 'Next' button then click 'Next' button.
9. Click 'Finish' button then the 'Close' button.

1. Start Windows Me
2. Click the 'Start' button, point to 'Setting', and then click 'Control Panel'.
3. Double Click the 'Display' Icon.
4. Choose the 'Settings' tab then click 'Advanced...'
5. Choose 'Monitor' button, then click 'Change...' button.
6. Choose "Specify the location of the driver (Advanced)" and click the 'Next' button.
7. Choose "Display a list of all the drivers in a specific location, so you can select the driver you want." then click 'Next' and then click 'Have Disk...'
8. Click 'Browse...' button then choose the appropriate drive F: (CD-ROM Drive) then click 'OK' button.
9. Click the 'OK' button then choose your monitor model and click the 'Next' button then click 'Next' button.
10. Click 'Finish' button then the 'Close' button.

1. Start Windows 2000
2. Click the 'Start' button, point to 'Setting', and then click 'Control Panel'.
3. Double Click the 'Display' Icon.
4. Choose the 'Settings' tab then click 'Advanced...'
5. Choose 'Monitor'
 - If the 'Properties' button is inactive, it means your monitor is properly configured. Please stop installation.
 - If the 'Properties' button is active. Click 'Properties' button. Please follow next step continually.
6. Click 'Driver' and then click on 'Update Driver...' then click on the 'Next' button.
7. Choose "Display a list of the known drivers for this device so that I can choose a specific driver" then click 'Next' and then click 'Have disk...'
8. Click 'Browse...' button then choose the appropriate drive F: (CD-ROM Drive).
9. Click the 'Open' button, then click the 'OK' button.
10. Choose your monitor model and click the 'Next' button then click 'Next' button.
11. Click 'Finish' button then the 'Close' button.
 - If you can see the "Digital Signature Not Found" window then click the 'Yes' button.



Case study : P-Line Focus issue (107P10/20, 109P10/20, 201P10)

Symptom: Poor Focus, Blurry Picture, colored outlines around characters.

Possible Cause:

Convergence Issues:

What is Convergence : As we know the CRT is comprised of thousands of color phosphor dots, (red, Green, and Blue).

Convergence is the alignment to ensure that the proper electron beam strikes the correct colored phosphor dot and the correct triad of phosphor dots. (Triad = a group of each colored phosphor dots forming a triangle / Bold below)

For a better photo refer to any of our CD ROM's under glossary of terms and Dot Pitch.

R G B R G B R G B
 B R G B R G B R
 R G B R G B R G B

Convergence is typically not adjustable by the customer.

On the P-Line with a Diamondtron CRT, Convergence can be found in the main menu under extra controls.

If convergence is misadjusted, it will appear out of focus to the untrained eye.

Looking closely may reveal that characters will have a colored outline around them. (Red, Green or Blue.), if so..

It is not a focus issue but a convergence alignment problem.

Cure: Using the On Screen Display of the monitor, adjust the Horz and Vert Convergence under extra controls in the menu.

4

DEGAUSSING

There are 3 states that degaussing device of monitor will execute.

Picture moves due to the degaussing device working after Select "DEGAUSS" (OSD screen or Front Control Knob) and press the OK button (front control of monitor), but it is normal.

1. Power on monitor.
2. The monitor wakes up from sleep mode.
3. "DEGAUSS" selection and execute it.

Degauss the set in the on screen menu.

Please be aware that many models will not degauss more than once within any given time period (up to 10 minutes).

This is due to the unit having a temperature sensitive resistor.

While the unit is degaussing, the resistor increases in value with heat and once it reaches a certain temperature, the resistance will rise and prevent voltage from reaching the degaussing coil. This is what stops the degauser, and this device's resistance will decrease as it cools back off enabling the degause to operate again.

This is an intentional design and is a industry standard, not just Philips.

A nearby magnetic field may magnetize the CRT.

Move the unit to another location and perform degaussing as mentioned above.

If the unit has been recently moved, the earth's magnetic field may have magnetized the CRT.

Perform degaussing as mentioned above.

If the unit has been dropped, the CRT shadow mask may be loose.

OK

NO

END

It is need to check and
repair the monitor.

5

Picture distortion (Geometry)

Tip : *****

The best way to understand "Image control features (by "On Screen Display" or "Front Control Knob") is to minimize and maximize each control feature while viewing a full image on the screen. By performing this, the customer will immediately understand:

1. How "Image control features" effect the image.
2. How to use "Image control features" to optimize the image.

Some type of magnetic or electrical interference typically causes poor geometry in the picture and is not normally a defective monitor.
Try the monitor in another physical location before suspecting the monitor itself.

- : Reset monitor to factory preset via OSD menu manipulation.
- : Change monitor timing to work at the recommended resolution .

OK

NO

YES

END

Access the Geometry Menu in the "On-Screen-Display" (or "Front Control") of the Monitor. Perform necessary adjustments.

Find out the specific "Image problem"

1. H or V size
2. H or V position
3. Geometry
 - a. Pincushion
 - b. Balanced
 - c. Trapezoid
 - d. Parallelogram
 - e. Tilt

H or V size

H or V position

Geometry problem

Is the control available ?

YES

Optimize with Image feature controls

Is picture displayed normally?

NO

YES

END

It is need to check and repair the monitor.

6

**Unstable Picture/
Picture Flickers**

A low refresh rate or electrical interference typically causes flickering in the picture and is not normally a defective monitor:

=>Try the monitor in another physical location before suspecting the monitor itself and adjust the refresh rate to 75hz or higher.

The "refresh rate" is the term that describes the number of times the entire screen is vertically scanned within one second, which means that if the refresh rate is 85 Hz, then the screen will be refreshed 85 times per second.

The higher the refresh rate, the better the image stability (less flicker).

The user who works long hours in front of the monitor will need this benefit to avoid eye fatigue and stress.

=>To change the refresh rate, go into "Start/Settings / Control Panel / Display / properties / Setting/Advance/Adaptor" Windows settings of the computer, the monitor will automatically adjust itself to the video card.

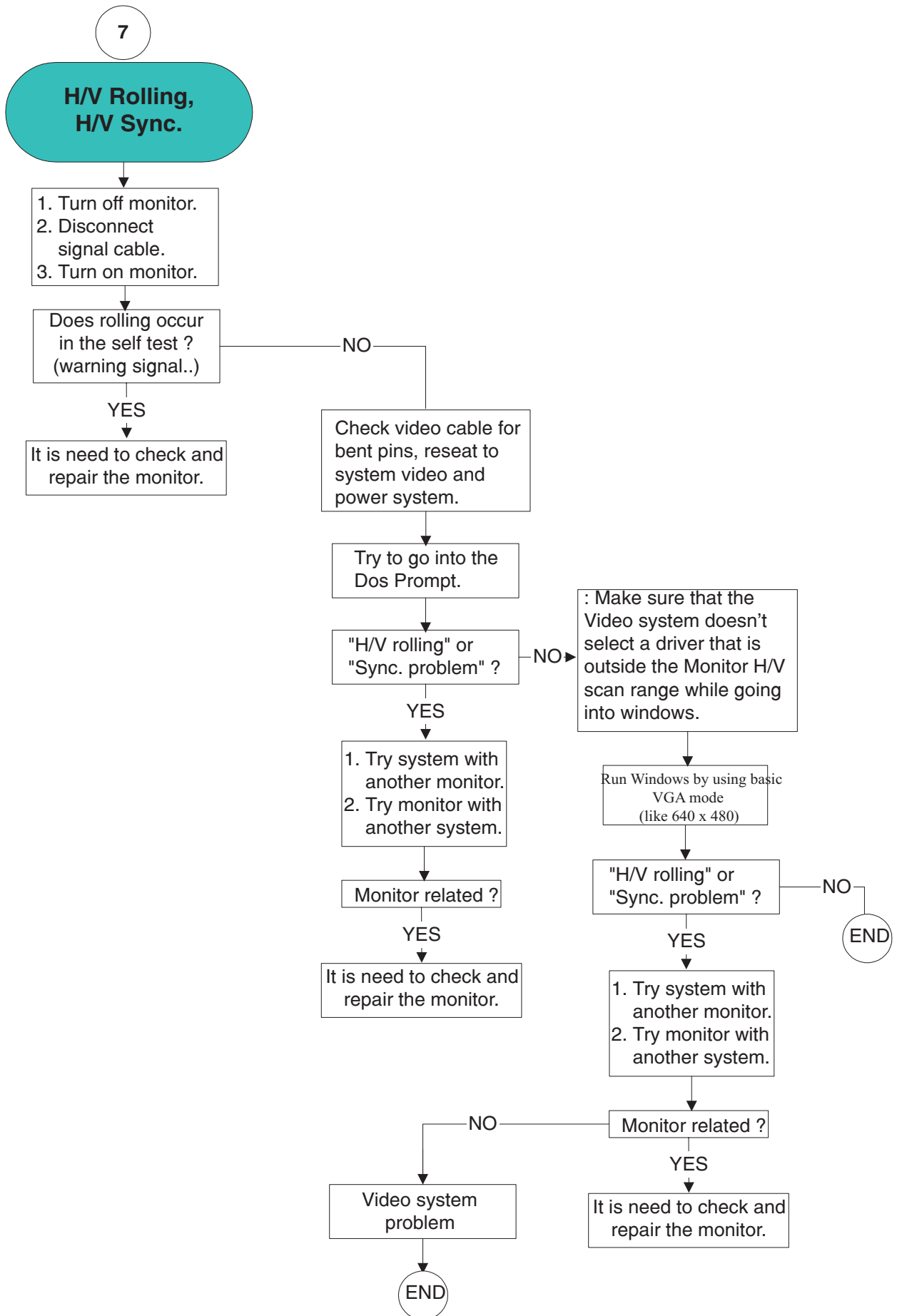
OK

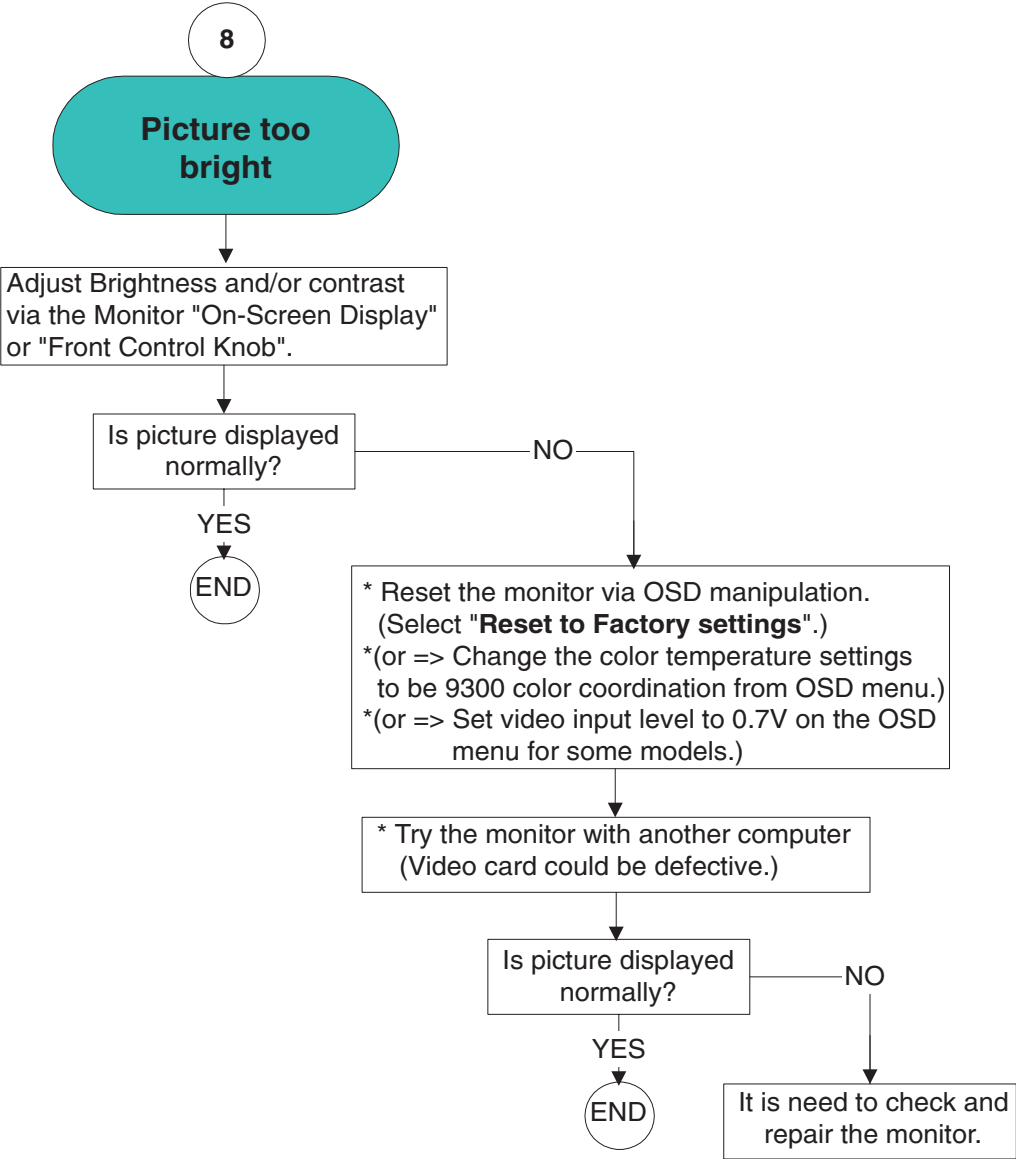
NO

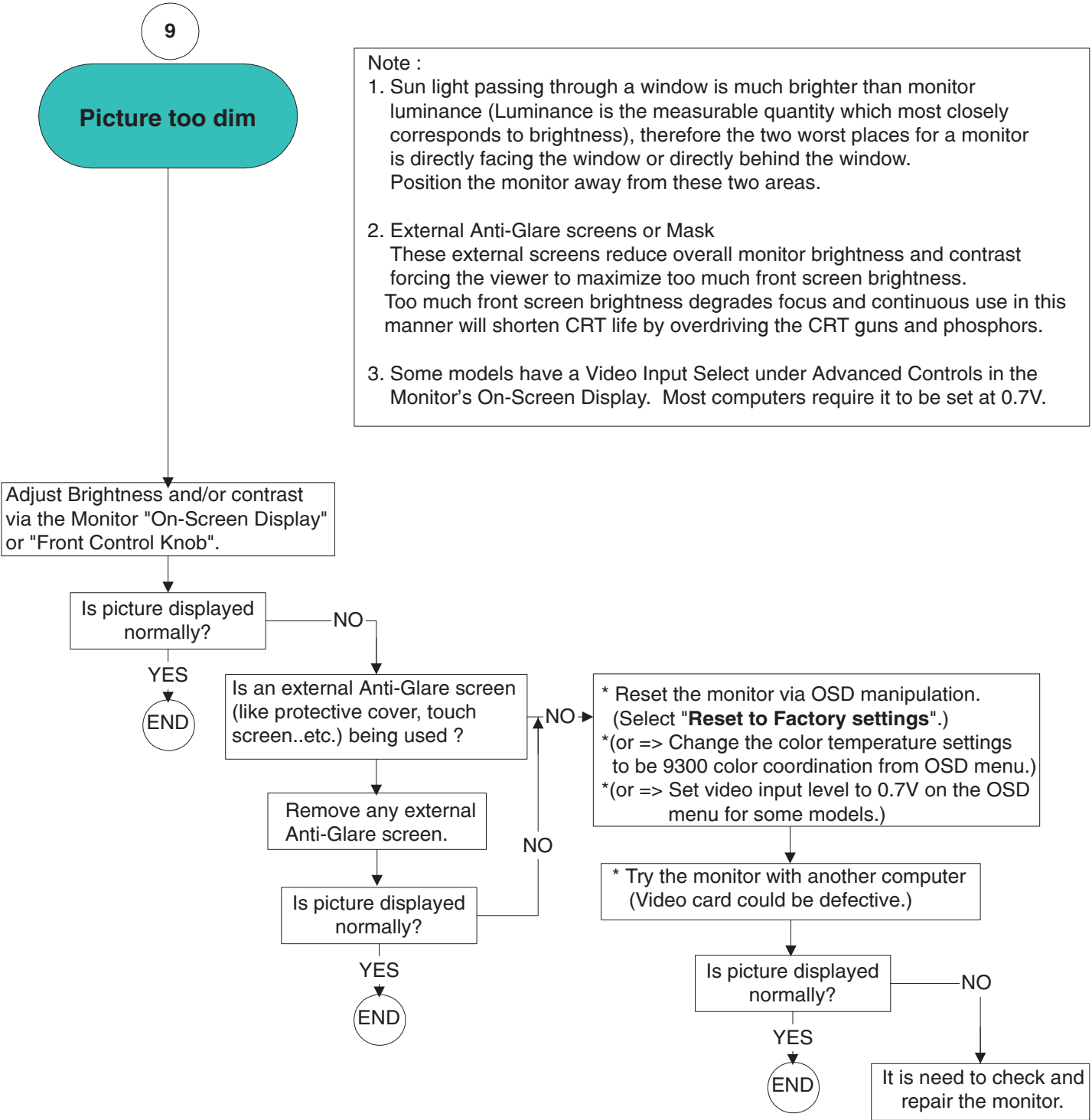
YES

END

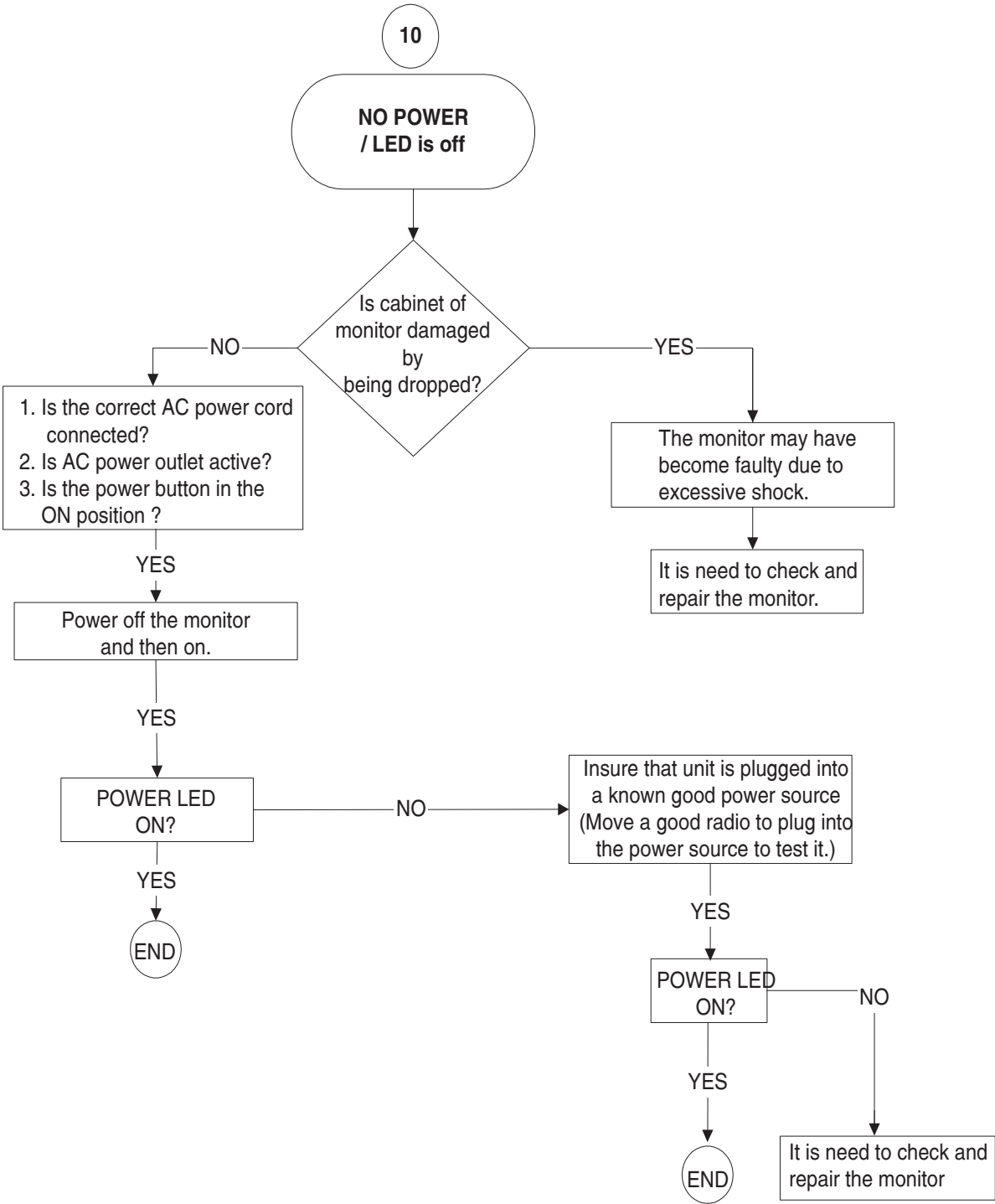
Please contact your
dealer/reseller for
more information.







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MOIRE

: Moir is a natural effect or phenomenon of CRT that has the appearance of a wavy pattern which is repetitive and superimposed on the screen as ripple images. , not just Philips monitor had. These are a few suggestions to help for reducing or minimizing the effect.

- Some monitors have a Moir cancellation feature, activate it to the on position or adjust the Moire cancellation function via the OSD manipulation on the monitor.
- Change resolution to the recommended standard for the specific monitor size.
- Change Window viewing pattern/scheme to a pattern where the moir is less visible.
- Change horizontal and vertical size to optimize the reduction of the moir effect .

OK

NO

YES

END

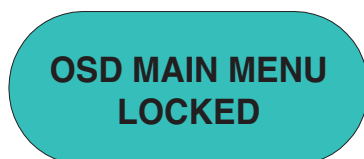
It is need to check and repair the monitor.

MOIR

A fringe pattern arising from the interference between two superimposed line patterns. In a monitor it comes from the interference between the shadow mask pattern and the video information (video moir, and between the shadow mask and the horizontal line pattern (scan moir. It shows itself as wavy patterns on the screen and becomes more noticeable as monitor resolution increases. Since the video signals varies continuously, little can be done about video moir. Scan moir Depends On the horizontal scanning frequency and can be alleviated. by appropriate choice of this frequency. Autoscans (MultiSync) monitors, however, which operate over a range of scanning frequencies, may sometimes exhibit Moir in certain video modes .

Several sources can act as a catalyzer to produce Moire. They are : The CRT, shadow mask, the electron beam spot size, the resolution, video patterns, and the horizontal and vertical size.

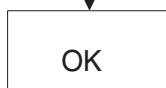
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**OSD MAIN MENU
LOCKED**



Press and hold the OSD menu key for about 10 seconds ,
until picture displays "OSD MAIN MENU UNLOCKED"



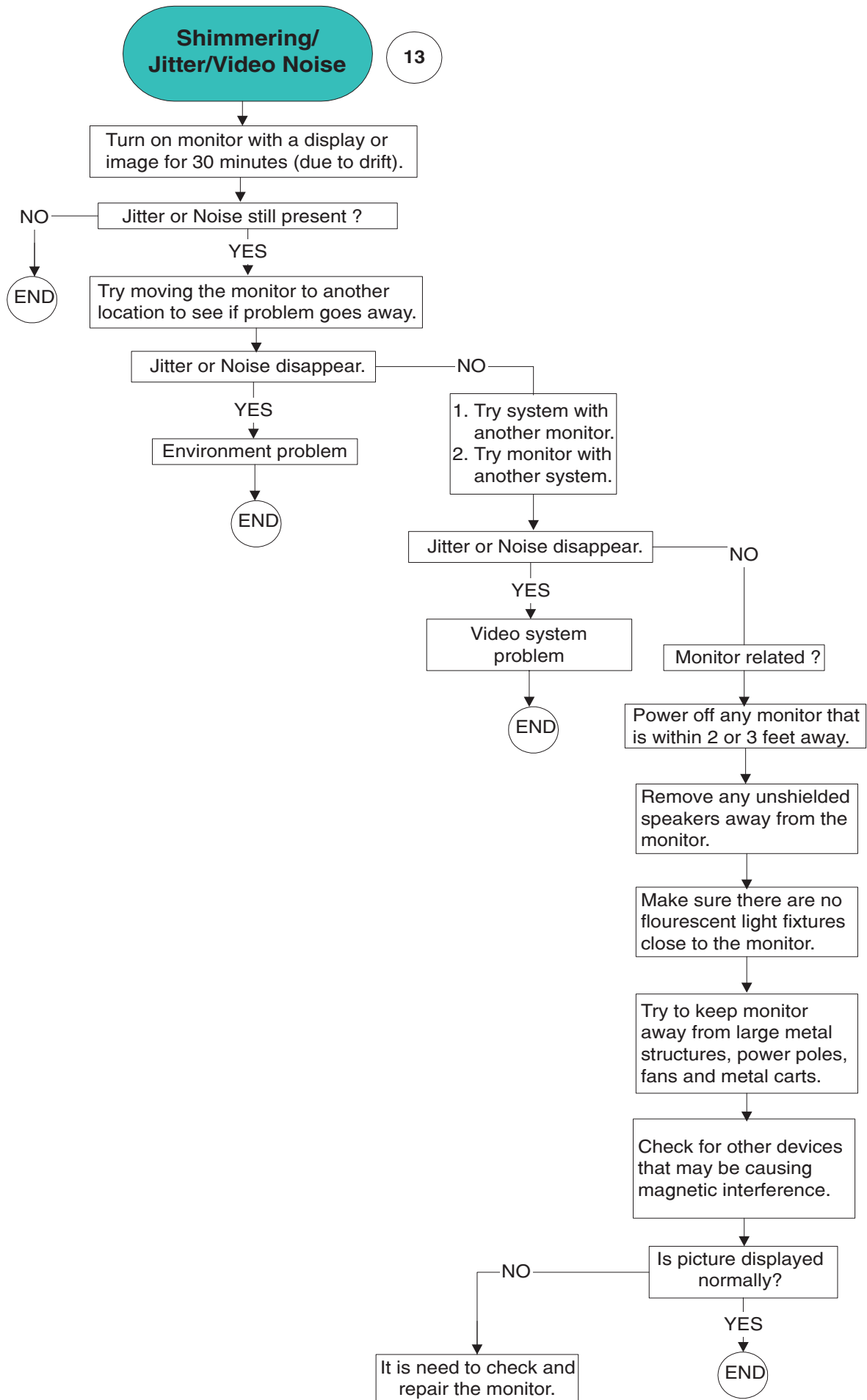
OK

NO

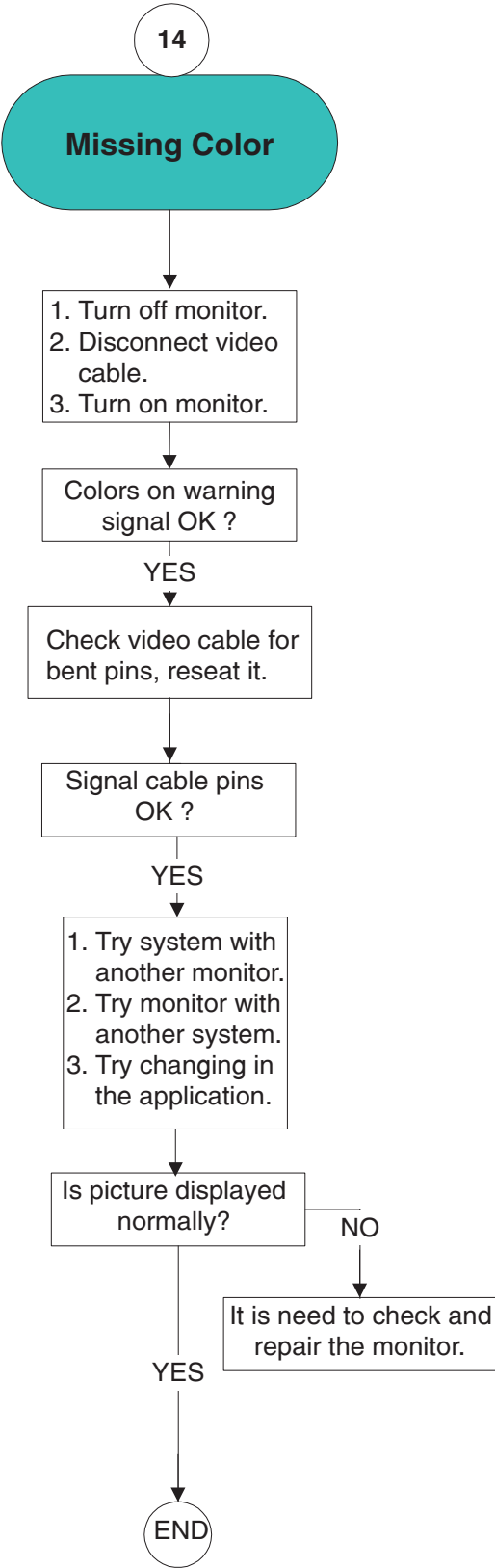
YES



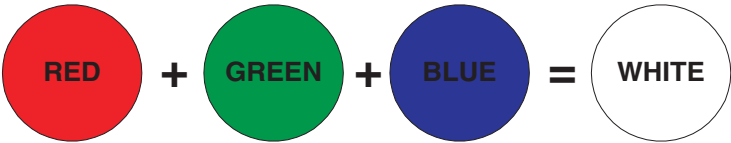
Please contact your
dealer/reseller for
more information.



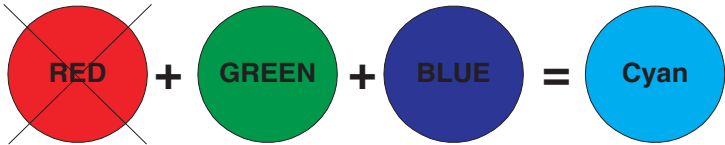
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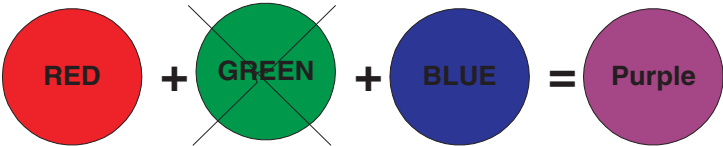
- There are 2 easy ways to determine the Missing color problem.
1. View an image that is supposed to be "White".
If one of the colors (RGB) is not functioning.
White can not be produced.
 2. View an image that supposed to contain Red, Green and Blue.
Color problems will be apparent when one or more of these colors can not be displayed.



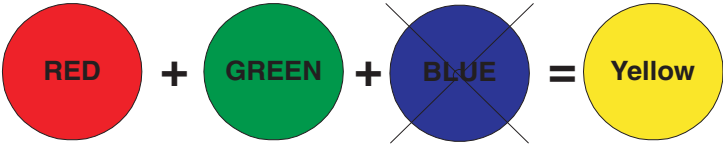
Cyan Color means that the red gun is missing.

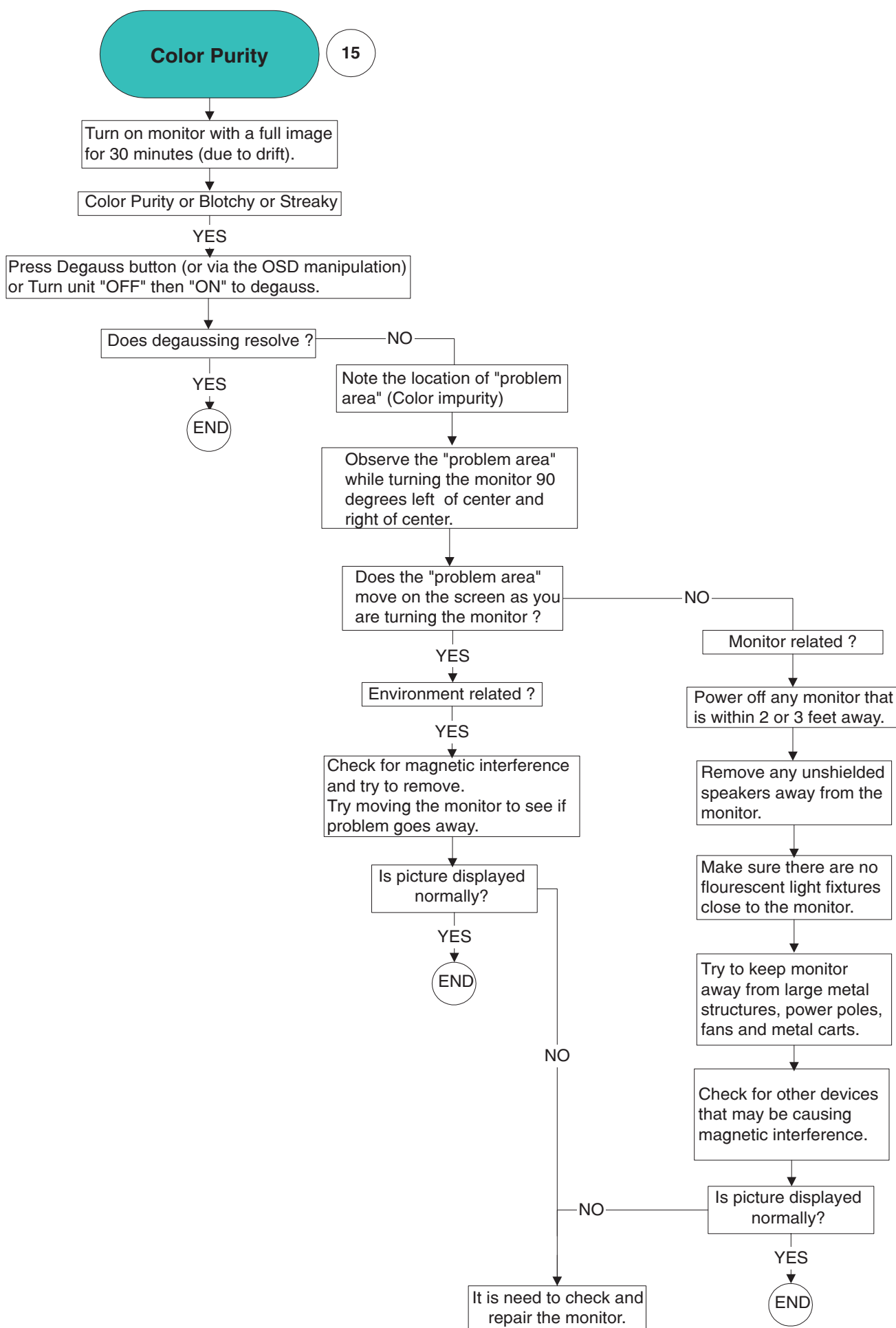


Magenta or Purple Color means that the green gun is missing.

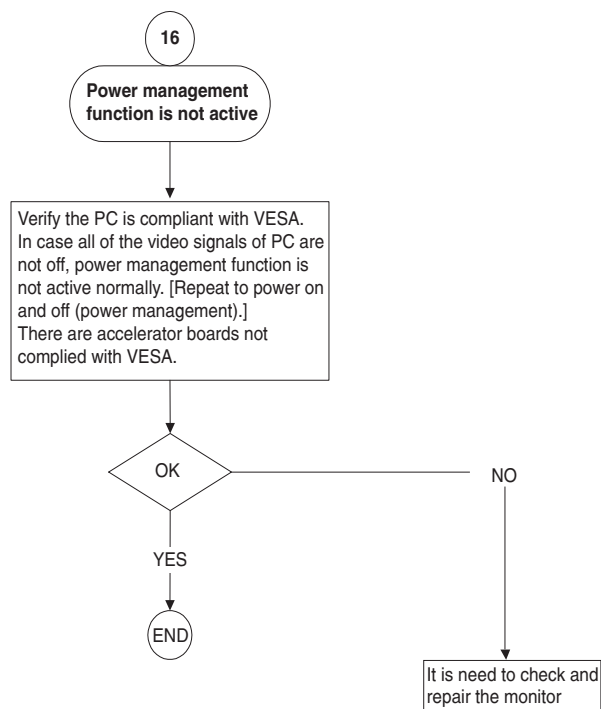


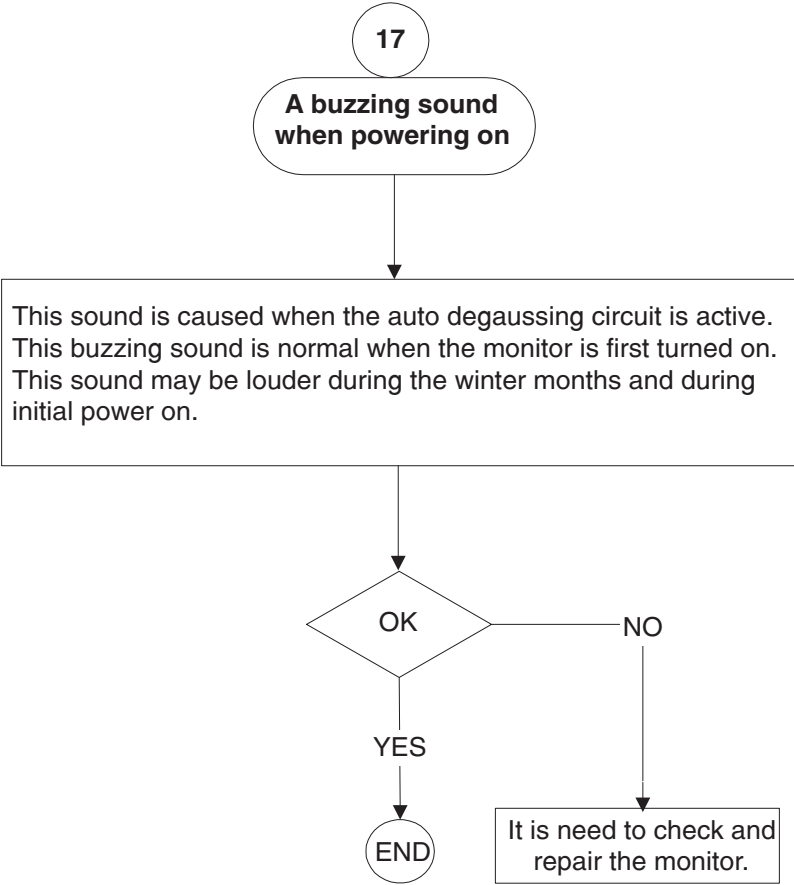
Yellow Color means that the blue gun is missing.

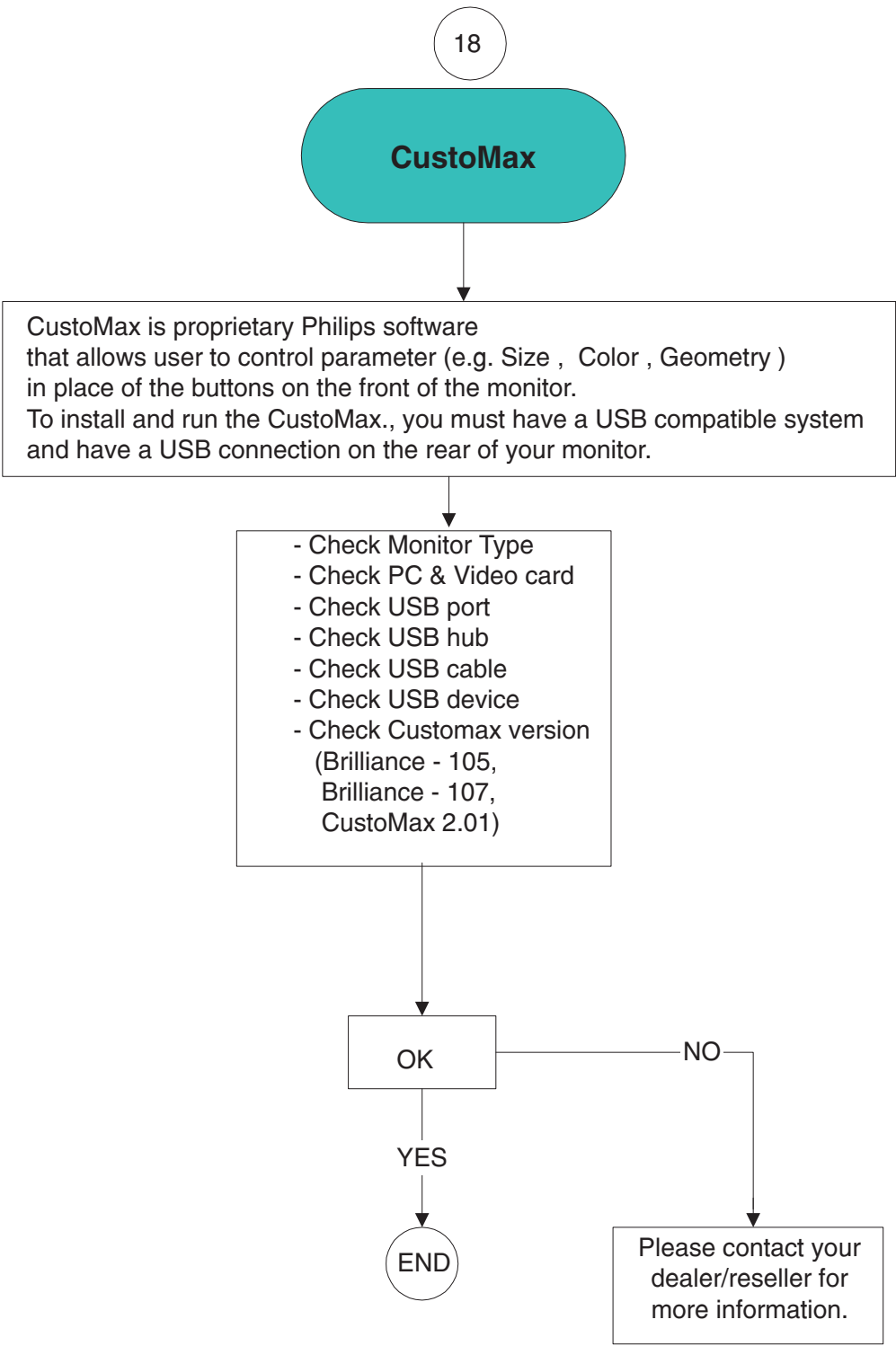




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Features:
CustoMax for monitors is a software program for adjusting the screen geometry, color quality, image quality and hardware and software settings of your display.

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Colorific

Colorific is a color matching software that helps user match the monitor and printer to fulfill the requirement of WYSIWYG (what you see is what you get) .
The Colorific software is the property of Sonnetech ,Ltd.
Only certain Philips monitor Models are equipped with the software.
If you have special interesting , please hit the web site "<http://www.colorific.com>".

The compatibility problem with Windows :

Colorific 4.2 or below issued before Sept 98 cannot run in Win98.

Colorific 4.24 (CM5800) manufactured before May 1998 and issued by Feb 98 can support Win 98.

Colorific4.3 can fully support in Win 98

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USB

USB = Universal Serial Bus

USB automatically determines resources (like driver software and bus bandwidth) required by peripherals.

USB makes necessary resources available without user intervention.

It is designed to meet Microsoft Plug and Play (PnP) specification, meaning users can install, and hot-swap devices without long installation procedures and reboots.

It allows 127 devices to run at the same time on the bus.

USB bus provides two types of data transfer speed -- 1.5Mbps and 12Mbps and it can provide a maximum of 500mA of current to devices attached on the bus.

Universal means all peripherals share the same connector.

Serial simply defines devices can daisy chain together.

Universal Serial Bus 1.1, the de facto external connectivity standard for Mac and PC, has picked up the speed after its slow adoption by peripheral manufacturers, users and PC OEMs.

USB 2.0 :

Drafted by Compaq, Hewlett Packard, Intel, Lucent, Microsoft, NEC and Philips,

USB Specification version 2.0 will increase device data throughput up to 480Mbps, 40 times faster than USB 1.1 devices.

